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FIRE ENGINEERING

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The Journal of the Fire Protection Profession

ESTABLISHED 1877 | OCTOBER 17, 1928 | ISSUED BI-WEEKLY

EUREKA FIRE HOSE

EUREKA FIRE HOSE MANUFACTURING COMPANY
50 Church Street, New York City
Atlanta Boston Chicago Columbus Dallas Denver Des Moines Detroit
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Important Announcement

You are cordially invited to witness a demonstration of the newest development in the field of fire-fighting, to take place at the 55th Annual Convention of the International Association of Fire Chiefs, Philadelphia, Pa., Friday, October 19, 1928, at 4:00 p. m.

An Amazing Demonstration

As a fire chief, public official or private citizen interested in fire-extinguishing and the reduction of our appalling national fire-waste, you will find this the most startling spectacle of its kind you ever witnessed. You will be astonished to see how quickly the largest and most dangerous fires can be extinguished instanter *without water or wetting—without muss or fuss—and without danger to the operator!*

Don't Miss This Opportunity

to become fully posted about the very latest development in the science of fire extinguishing. If you don't attend the Convention, write us for full information.

The "du-Gas" Method

of fire-extinguishing is the result of nine years intensive research and practical tests. With a record of successful service it has established itself as the most advanced type of operation in putting out fires. There is nothing else like it.

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Made to meet the requirements of cities and towns of *any* size.

***Guaranteed* to operate perfectly with any and all other makes of succession type boxes you may now have in service.**

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FIRE ENGINEERING

A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER

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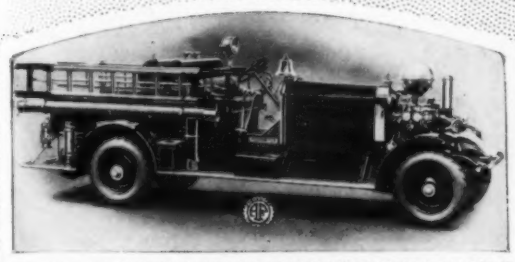
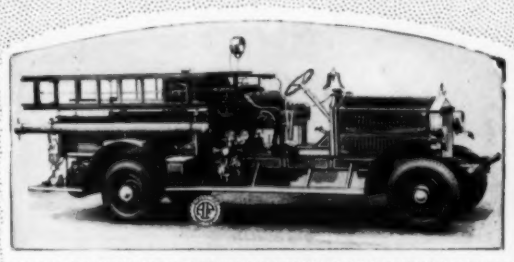


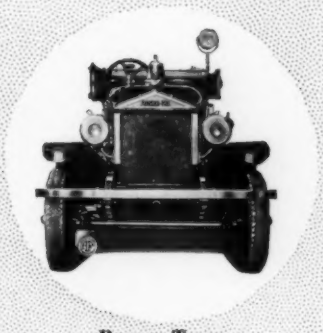
Piston Type Pumpers



Rotary Type Pumpers

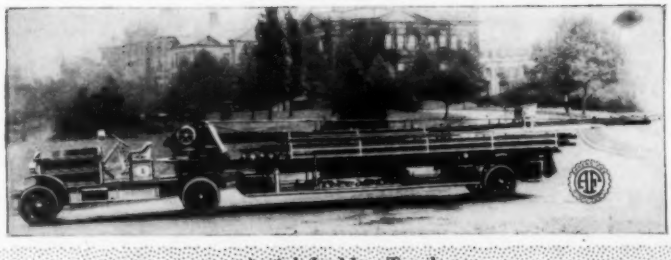
THE AHRENS-FOX LINE

Quality Fire Apparatus



Piston Type

Rotary Type



Aerial Ladder Trucks

Tractor-Trailers of Non-Aerial Type

Four Wheel Ladder Service Trucks

The Ahrens-Fox Fire Engine Co. Cincinnati, Ohio

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of
STERLING SIRENS
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Just Published!
You'll want a copy for your files of this new Sterling Bulletin that discusses coded signals, semi-coded sirens, intermediate sirens, apparatus sirens, control systems, traffic-clearing systems and local auxiliary alarms. Write for bulletin 660.

Are You Using This Capable Service?

We often wonder, when we mention our Engineering Department, if all our friends know how capable it is and how gladly we put it at their service.

It is staffed by technical men who have spent years in studying the application of various types of sirens to many and different municipal problems.

It can answer and provide you with data on many a question that enters your mind, or that you may be asked. For instance, you may inquire: "Would a traffic-clearing system prevent accidents and eliminate delay?" Or: "What type of Fire Alarm System is best suited to my locality?"

Tell us something about your particular problem. It will be carefully studied and a special report forwarded to you. This service is, of course, without charge or obligation. Sterling Siren Fire Alarm Co., Inc., 61 Allen St., Rochester, N. Y.

An actual instance of how A.D.T. Central Station Service functioned for a prominent grain elevator (name on request).

The watchman dead—a fire raging

A.D.T. Roundsmen are prepared to visit the protected premises at a moment's notice. They function in connection with the various A.D.T. Central Station Services:

- Night Watchman Supervision
- Manual Fire Alarm
- Automatic Sprinkler Supervision
- Automatic Fire Alarm
- Bank Vault Burglar Alarm
- Mercantile Burglar Alarm
- Police Call

There are also A.D.T. Local Systems for localities where A.D.T. Central Station Service is not available.

but the A.D.T. Watchmen's Supervisory Service was on the job and prevented what might have been a serious fire. Failing to receive the watchman's signal within the prescribed time, an A.D.T. roundsman was despatched immediately to this grain elevator where he found the watchman unconscious and a fire caused by his overturned lantern. Prompt action in summoning the fire department from nearby A.D.T. Fire Alarm Box and in notifying the other watchman and persons in authority probably saved the entire elevator from destruction.

This is typical of the prompt and efficient operation of A.D.T. Watchman's Supervisory Service. Available for local operation or through one of the 113 A.D.T. Central Offices located throughout the country.

For sure protection, specify A.D.T.

CONTROLLED COMPANIES OF

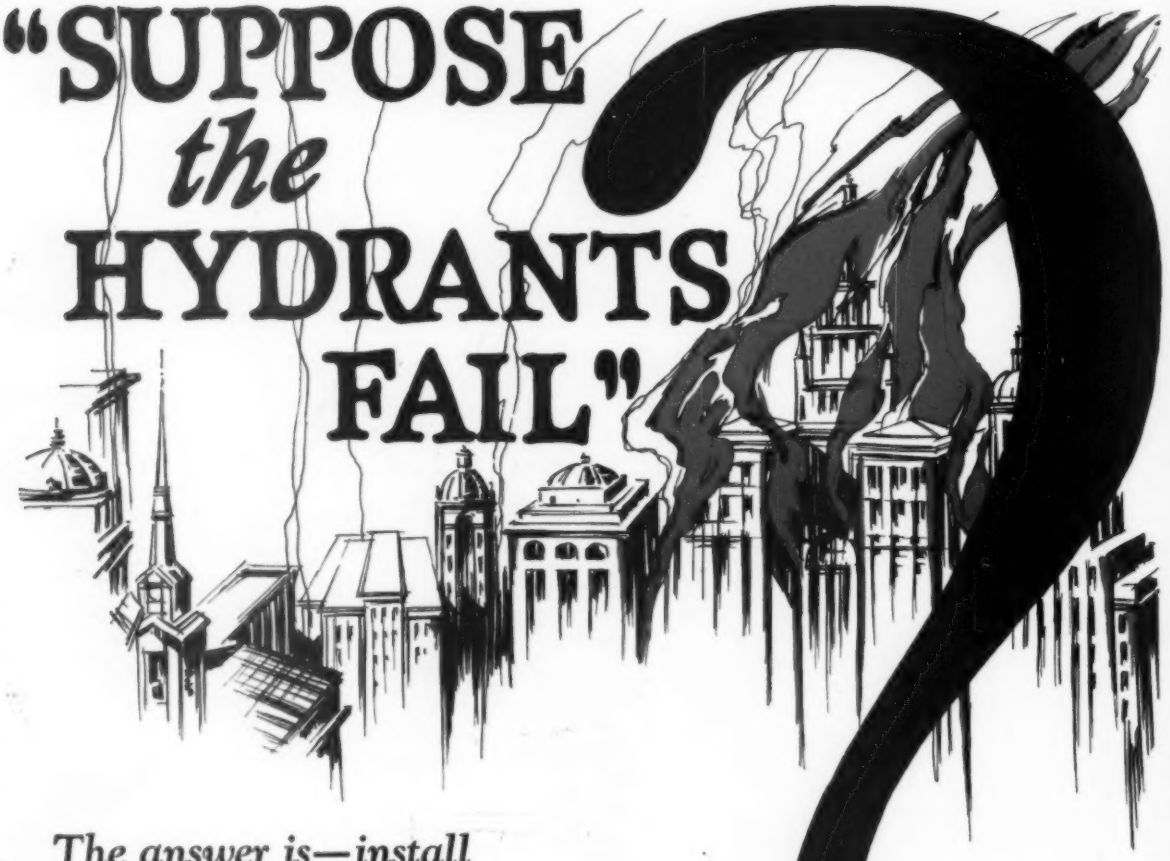
American District Telegraph Co.

183 Varick St., New York, N. Y.

PROTECTION A.D.T. SERVICES

2949

"SUPPOSE *the* HYDRANTS FAIL"?



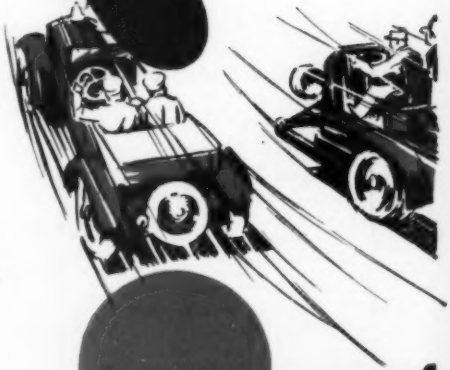
The answer is—install
DARLING HYDRANTS!

They are ready to go into instant action day or night—year in and year out. They are designed to deliver the greatest possible volume of water. The barrels are large and there are no unnatural obstructions to check the flow. And Darlings are sturdy enough to resist heavy impacts.

Wherever used Darling Fire Hydrants win confidence

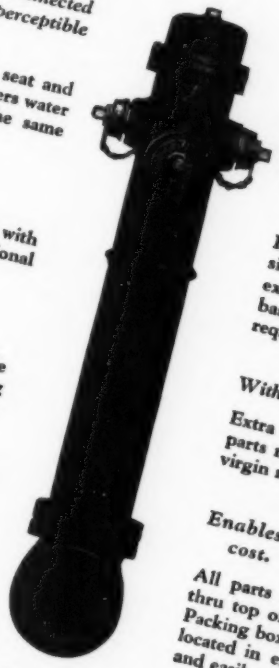
DARLING VALVE AND MANUFACTURING CO.
Williamsport, Pa., U. S. A.

New York Chicago Oklahoma City Houston



DARLING

What a DARLING HYDRANT will do



Deliver water to nozzles to the capacity of the line connected to Hydrant with no perceptible loss in pressure.

Short opening thru valve seat and the extra large barrel delivers water to the nozzles at about the same pressure as in the main.

Operate easily.

Central operating valve rod with direct action on valve. No torsional friction and strain.

Shut off effectively.

Conical shape oak tanned sole leather valve having gradual closing on tapered bronze seat with no possibility of water hammer.

Quickly and thoroughly drains water from barrel after hydrant is closed.

All bronze, non-clogging, three-hole drain with automatic action and positive operation.

Permits installing directly in water main.

Hydrants can be equipped with tee type base when it is desired to install the hydrants in the water main.

Prevent water escaping if barrel should be broken above valve.

Compression type valve closing with the pressure.

Readily conform to changes in installation conditions.

Hydrant can be raised to any desired length by simply bolting an extension piece between barrel and base of hydrant. No other parts required.

Withstand hard use.

Extra heavy construction and all parts made from the best grade of virgin metals.

Enables servicing at minimum cost.

All parts including seats removed thru top of hydrant. No digging. Packing box and operating threads located in extreme top of hydrant and easily accessible for lubricating.

Affords minimum installation cost.

Not necessary to excavate below trench level to set hydrant as the waste water drain is located directly above the main valve.

DARLING VALVE AND MANUFACTURING CO.

Williamsport, Pa., U. S. A.

New York Chicago Oklahoma City Houston

FIRE HYDRANTS

FROM COAST
American-LaFrance lead-proven

Visit fire departments all over the country and the chances are 9 to 1 that you will find American-LaFrance Motor Fire Apparatus. 90% of all departments have chosen American-LaFrance—from the smaller communities where one or two pieces of American-LaFrance apparatus stand guard, to fleets like that of 320 pieces protecting New York City.

Fleets of American-LaFrance apparatus are the result of re-orders—and re-orders come only as a result of proven performance. Here are listed a few of the leading cities protected by American-LaFrance fleets.

New York City	320	Schenectady, N. Y.	16	Poughkeepsie, N. Y.	9	N. Palm Beach, Fla.	7
Boston, Mass.	153	Nashville, Tenn.	16	Charlotte, N. C.	9	Marion, Ind.	7
Philadelphia, Pa.	150	Syracuse, N. Y.	15	Little Rock, Ark.	9	South Bend, Ind.	7
Pittsburgh, Pa.	110	Scranton, Pa.	15	Fresno, Cal.	9	Dubuque, Ia.	7
San Francisco, Cal.	59	Knoxville, Tenn.	15	Columbus, Ohio	9	Sioux City, Ia.	7
Washington, D. C.	51	Wilmington, Del.	14	Brookline, Mass.	9	Baton Rouge, La.	7
Providence, R. I.	46	Chattanooga, Tenn.	14	Elmira, N. Y.	9	Waltham, Mass.	7
St. Louis, Mo.	44	Hartford, Conn.	14	Raleigh, N. C.	9	Battle Creek, Mich.	7
Dallas, Texas	40	Newark, N. J.	13	Johnstown, Pa.	9	Grand Rapids, Mich.	7
Baltimore, Md.	37	Miami, Fla.	13	Newport, R. I.	9	Muskegon, Mich.	7
Jersey City, N. J.	36	Worcester, Mass.	13	Tacoma, Wash.	9	Saginaw, Mich.	7
Buffalo, N. Y.	36	St. Joseph, Mo.	13	Bayonne, N. J.	8	Kansas City, Mo.	7
Omaha, Nebr.	33	Union City, N. J.	13	Wilmington, N. C.	8	Springfield, Mo.	7
Portland, Ore.	33	Albany, N. Y.	13	St. Petersburg, Fla.	8	Hackensack, N. J.	7
Norfolk, Va.	33	Binghamton, N. Y.	13	Glendale, Cal.	8	Montclair, N. J.	7
Atlanta, Ga.	32	Erie, Pa.	13	Quincy, Ill.	8	Perth Amboy, N. J.	7
Atlantic City, N. J.	31	Lancaster, Pa.	13	Cedar Rapids, Ia.	8	Albuquerque, N. M.	7
Dayton, Ohio.	30	Bridgeport, Conn.	12	Topeka, Kan.	8	Larchmont, N. Y.	7
Memphis, Tenn.	27	Fort Wayne, Ind.	12	St. Paul, Minn.	8	Asheville, N. C.	7
Cambridge, Mass.	25	Louisville, Ky.	12	Jackson, Mich.	8	Winston-Salem, N. C.	7
Fort Worth, Tex.	25	Shreveport, La.	12	West New York, N. J.	8	Lakewood, Ohio	7
Des Moines, Ia.	23	East Orange, N. J.	12	Greensboro, N. C.	8	Tulsa, Okla.	7
Los Angeles, Cal.	22	Oklahoma City, Okla.	12	Muskogee, Okla.	8	El Paso, Tex.	7
New Orleans, La.	22	Mobile, Ala.	11	York, Pa.	8	San Antonio, Tex.	7
Reading, Pa.	22	Toledo, Ohio	11	Charleston, S. C.	8	Lynchburg, Va.	7
Houston, Tex.	21	Youngstown, Ohio	11	Port Arthur, Tex.	8	Charleston, W. Va.	7
Camden, N. J.	21	Wheeling, W. Va.	11	Racine, Wisc.	8	Phoenix, Ariz.	6
Jacksonville, Fla.	20	White Plains, N. Y.	10	Ann Harbor, Mich.	7	Concord, Mass.	6
Minneapolis, Minn.	19	Stockton, Cal.	10	Port Chester, N. Y.	7	Holyoke, Mass.	6
Yonkers, N. Y.	19	Denver, Colo.	10	Red Bank, N. J.	7	Lincoln, Nebra.	6
Birmingham, Ala.	18	Macon, N. J.	10	Zanesville, Ohio	7	Irvington, N. J.	6
Fall River, Mass.	18	Highland Pk., Mich.	10	Sacramento, Cal.	7	Auburn, N. Y.	6
Savannah, Ga.	17	Pontiac, Mich.	10	New Britain, Conn.	7	Cohoes, N. Y.	6
Seattle, Wash.	17	Duluth, Minn.	10	Stamford, Conn.	7	Jamestown, N. Y.	6
Flint, Mich.	17	Trenton, N. J.	10	Orlando, Fla.	7	Cleveland, Ohio	6
Waterbury, Conn.	17	New Rochelle, N. Y.	10	Pensacola, Fla.	7	Bethlehem, Pa.	6
Utica, N. Y.	16	Richmond, Va.	10	Tampa, Fla.	7	Harrisburg, Pa.	6

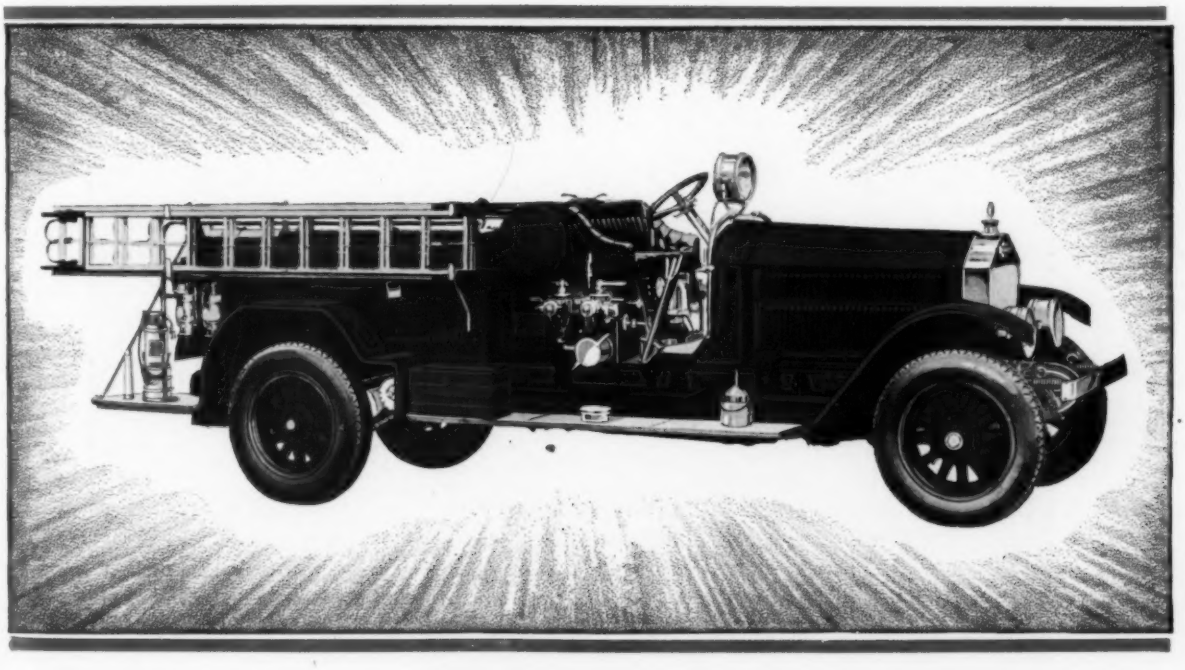
AMERICAN-LAFRANCE AND
A Complete Eng
For Exting

TO COAST

ership results from performance

The American-LaFrance Metropolitan Triple Combination Pumper

The "Metropolitan"—leader of the American-LaFrance line—has a pumping capacity of 1000 gallons per minute. Established road and pumping records have built for this pumper an outstanding prestige with men on the firing line.



FOAMITE PROTECTION

ineering Service

uishing Fires

18 Outstanding 1929

STANDARD STREET MODEL

"A Box A Block"

Features— Peerless Fire Alarm Box

Modern methods and materials have been utilized at every possible point in this latest *Gamewell* development. The result is a fire alarm box that is in keeping with the trend of the times. It offers greater protection to public and official operators—greater resistance to corrosion and electrical damage—and greater ease of operation and maintenance to official operators.

1. **10,000 volts insulation** *from line to ground connection in box (exclusive of lightning arrester) protects the public, municipal officials and box, against high voltage cross-ups and lightning.*
2. **All parts inter-changeable.**
3. **Complete inside case** *can be removed without opening line.*
4. **Standard street box** *can be readily converted into Master Box.*
5. **Positive non-interfering magnets** *with silk enamel insulation.*
6. **New tap bell and auxiliary magnets** *offer maximum resistance to lightning burn-outs.*
7. **New lightning arrester** *on a porcelain base entirely outside of mechanism case to protect the mechanism from high voltage foreign currents and lightning.*
8. **New telephone connection** *provides maximum telephoning efficiency without affecting fire alarm transmission efficiency.*
9. **New terminal block** *provides for new testing and telephone functions, with all live parts completely enclosed.*
10. **New dust and moisture-proof** *movement cover.*
11. **All parts** *requiring manual operation in inside case are completely insulated as a protection to official operators.*
12. **All iron and steel parts** *are "Parkerized" or Cadmium plated by the "Udylite" process to prevent corrosion.*
13. **Marked connection wires.**
14. **Convenient new line terminals.**
15. **New tap bell** *with a loud, clear signal.*
16. **New device** *to prevent box from being unintentionally cut out of service by shunt plug.*
17. **New auxiliary attachment.**
    —armature will not accidently trip causing a false alarm due to combination of gravity and spring retraction.
    —auxiliary loop is disconnected completely when auxiliary attachment has operated to prevent municipal fire alarm circuit from coming in contact with foreign currents in burning building.
    —cannot be reset if auxiliary loop is open (or closed, with open circuit employed) to prevent false alarms and to serve as a check upon the loop circuit.
    —either open or closed circuit by simple change in wiring.
18. **New test feature.**
    —does not open or interfere with main circuit.
    —provides for testing movement in accordance with requirements of the National Board of Fire Underwriters.
    —test switch can be entirely removed.
    —meter can be plugged in at box for testing line current or voltage.
    —use of telephone at time of testing does not interfere with test functions.

THE GAMEWELL COMPANY

NEWTON UPPER FALLS, MASS.

Leading Fire Apparatus Manufacturers

.... *including*

The Ahrens-Fox Fire Engine Co.
"Builders of Quality Fire Apparatus"

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BOYER STANDARD FIRE APPARATUS

Buffalo Fire Appliance Corporation
"If you want something better buy Buffalo"

COMBINATION LADDER CO. INC.

FIRE AND MARINE EQUIPMENT CORP.
"BUILDERS OF MOTORIZED FIRE APPARATUS"

MAXIM MOTOR COMPANY

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"UNIVERSAL"

THE PROSPECT FIRE ENGINE COMPANY
"DELUGE" DEPENDABLE FIRE APPARATUS

Sanford Motor Truck Company

The **SEAGRAVE** *Corporation*

ersecommend FOMON Generators

····· use them with your present apparatus

because:

FOMON chemicals cannot possibly deteriorate, as they are separated in packing, though handled as one.

Foam stream from FOMON generator is non-pulsating — a perfect arc — permitting better application of foam.

In actual competition FOMON using standard 2½" hose has proved superior to other systems using larger hose.

Super size generators and special generators for use in conjunction with booster tanks may also be had, and adapters permit use of larger or smaller hose lines on generators.

FOMON delivers ***more foam*** of better ***quality*** as FOMON chemicals are 100% foam producing (no "filler" or inert material) and the generator planned and adjusted for the chemicals.

FIRE DEPARTMENT TYPE GENERATOR is especially planned for lightness, portability, and efficiency and may be used anywhere a hose line can be laid and chemicals transported.

WHEN YOU THINK OF FOAM, THINK OF FOMON, and the FOMON SLOGAN:

AMERICAN FOMON COMPANY

"Fomon—Fire Out"

1005 Drexel Building Philadelphia, Pa.

Offices and stocks in the principal cities

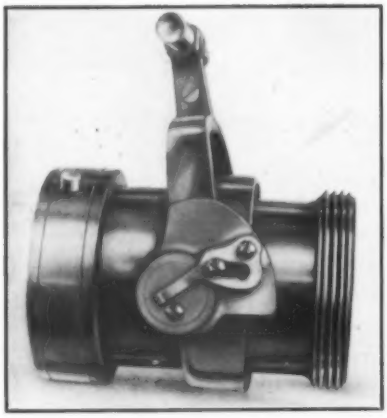
Fire Department Type Fomon Generator (also made in Industrial Type — Underwriters' approved)

The Fomon Foam Type Fire Department Extinguisher designed to be carried on fire apparatus

Charles H. Fischer—writes a

Why Thread Suction Hose?

New Threadless Shift Coupler Connects Instantly



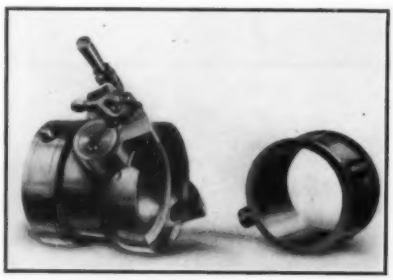
The New Threadless Shift Coupler for Hard or Soft Suction.

Never Fails.

Here is the last word in Fire Equipment Development. The NATIONAL STANDARD THREADLESS SHIFT COUPLER pictured here represents the greatest modern improvement in coupling design. It permits an instantaneous hookup that is perfectly adaptable to either hard or soft suction apparatus. It revolutionizes fire fighting methods. Note shift handle—Pull it and a perfect pressure-proof connection is instantly guaranteed—Push it and the coupling is disconnected.

Think what this simple, speedy operation means in time saving, as well as the rush service it assures when a quick getaway often means the safety of both men and apparatus. No modern fire department can now justify the useless waste of time, apparatus and money that invariably accompanies the use of threaded couplings. This new Shift Coupler eliminates every coupling defect.

Here is the Shift Coupler disconnected by a push of the handle. A Shift that any fireman can operate and yet so positive a connection that leakage under any pressure is impossible. Note the simplicity of construction—There are no delicate parts to get out of order—No gasket wear or leak—No replacements—This Shift Coupler is guaranteed to give years of trouble-free service.



SPECIAL FEATURES

Sturdy brass Construction outlasts the apparatus—Simple to install—Any fireman can operate it—Eliminates delay—No lining up with hydrant—No threading or misthreading—No wrenches—No gasket-wear—Cannot leak, freeze or jam—No Thawing necessary—Guarantees positive, speedy connection and disconnection. Note friction proof roller lugs.

Write for Descriptive Literature

GUARANTEED

The Shift Coupler has been thoroughly tested under actual fire fighting conditions. Departments that equipped with this Threadless Coupler five years ago report perfect satisfaction throughout all that time without a sign of wear or leak in this speedy, shift-connecting coupling. The National Unit is backed by years of exhaustive tests, and is manufactured under the supervision of experts in the construction of fire fighting equipment. The finest of materials combined with master workmanship make this new unit the outstanding coupling development of modern scientific fire fighting.

Manufactured exclusively under patent rights by

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Manufacturers and Distributors of Threadless Couplings for Fire Engines, Oil Tanks and Trucks, Oilhose, etc.

Executive Office: 215-217 BEACH 122ND STREET, ROCKAWAY PARK, N. Y.

an open letter to all the Chiefs

of the INTERNATIONAL AND EASTERN FIRE CHIEFS ASSOCIATIONS

75 MAIDEN LANE
New York, N. Y.
TELEPHONE BEEKMAN 1281

MEMBER
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N. J. State Fire Chief's Ass'n
Western Ass'n Electrical Inspectors
American Water Works Ass'n
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Administrative Committee
Museum of Safety Dept. of Labor
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Consulting Fire Protection Engineer
AND
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TELEPHONE UNION 7000

CONSULTING ENGINEER
Eastern Division, International Ass'n of Fire Chiefs'
Universal Oil Products Co.

Petroleum Industry Specialist
IN
Fire Hazard Analysis
Fire Protection
Fire Prevention
Insurance Rating Analysis
Insurance Placing
As Applied to
Refineries, Tank Farms
Casinghead Plants, Etc.

October 4, 1928.

DEAR CHIEF:

Having in mind through years of intimate contact with American Fire Chiefs and their ambition to improve and progress, I know you will all appreciate this timely advice on a new invention that is of utmost importance to all interested in fire fighting. This invention makes it possible to eliminate the old threaded, slow, time consuming method of connecting an engine to a hydrant or setting it to draft.

Hard suction is acknowledged to be the superior for service at hydrants or at draft. Because of the difficulty and frequent long delays in connecting the stiff suction, the less reliable soft suction has often been substituted. A new threadless coupler, now available, makes it possible to connect stiff suctions in less time than is required for connecting the soft suction with threaded couplings. A hundred threadless couplings have been offered to fire service as a solution to this problem. Only one has met all requirements, operates efficiently, survives all standard tests and gruelling service under actual fire fighting conditions. This new threadless shift coupler has been put through more than five years of actual fire fighting on hard suction by such representative departments as Atlantic City, Bayonne, Elizabeth, West Orange, New Jersey, and in numerous other departments, both paid and volunteer. These installations were for purely test purposes to determine the practical, fire-fighting value of this threadless Shift Coupler. Throughout these five years of rigorous tests, under the most adverse and varying circumstances every Shift Coupler proved itself the perfect threadless coupling for hard or soft suction work. Now backed by records of years of successful service this new invention is available for national distribution and its special features make it worthy of investigation by every Fire Chief.

The Threadless Shift Coupler can be installed on any pumper in fifteen minutes, without alteration, and without any tools other than a spanner wrench. Once installed it can be forgotten, for it eliminates forever all labors of threading, the evils of crossed threads. Perhaps its greatest advantage is the time it saves not only in its quick hook-up but also in its quick disconnection for a speedy getaway when flames or falling walls threaten men and apparatus. Another special feature is the fact that this shift coupler standardizes the engine end and encourages the use of larger suction hose, as well as a dozen other valuable advantages.

I earnestly recommend that every Fire Chief investigate this new development both in the cause of efficiency and economy.

If I can be of any service or assistance to you please do not hesitate to call on me.

With kindest regards and best wishes, I am,

Yours very truly,

Chas H. Fischer

Consulting Engineer.

Look for our I.A.F.C. Exhibit in the Ahrens-Fox Booth, Philadelphia, Oct. 17-20

One of the machines used in the manufacture of the famous

FABRIC

Wax and Para Gum Treated Cotton Rubber Lined Fire Hose

OUR first process—that of treating cotton yarn with melted wax and Para gum. The "wax" is ozocerite and the "gum" is smoked latex from the rubber tree. This compound is kept in hot solution in the steam heated cylindrical tank of the TREATMENT MACHINES. The hose cord passes through this hot "treatment" and becoming thoroughly impregnated renders the fire hose fabric from which it is woven, MILDEW-PROOF, ROT-PROOF, PLIABLE, STRONG and DURABLE.

Fabric Fire Hose Co.

9 - 15 Park Place, New York, N. Y.
124–126 W. Lake Street, Chicago

Atlanta
Boston
Columbus
Dallas
Binghamton
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Minneapolis
Portland
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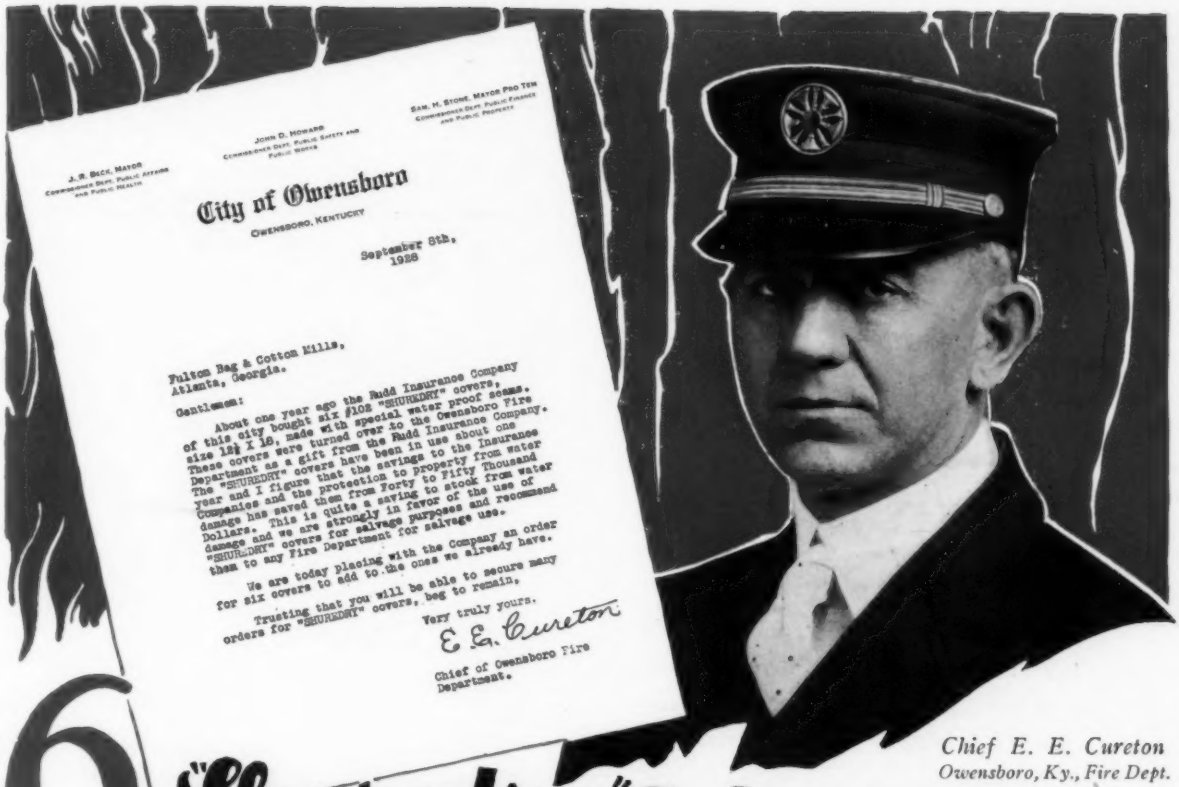
J. R. BECK, MAYOR
COMMISSIONER DEPT. PUBLIC AFFAIRS AND PUBLIC HEALTH
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COMMISSIONER DEPT. PUBLIC SAFETY AND PUBLIC WORKS
SAM. H. STONE, MAYOR PRO TEM
COMMISSIONER DEPT. PUBLIC FINANCE AND PUBLIC PROPERTY
City of Owensboro
OWENSBORO, KENTUCKY
September 8th, 1928
Fulton Bag & Cotton Mills,
Atlanta, Georgia.
Gentlemen:
About one year ago the Rudd Insurance Company of this city bought six #10S "SHUREDRY" covers, size 18½ X 18, made with special water proof seams. These covers were turned over to the Owensboro Fire Department as a gift from the Rudd Insurance Company. The "SHUREDRY" covers have been in use about one year and I figure that the savings to the Insurance Companies and the protection to property from water damage has saved them from Forty to Fifty Thousand Dollars. This is quite a saving to stock from water damage and we are strongly in favor of the use of "SHUREDRY" covers for salvage purposes and recommend them to any Fire Department for salvage use.
We are today placing with the Company an order for six covers to add to the ones we already have.
Trusting that you will be able to secure many orders for "SHUREDRY" covers, beg to remain,
Very truly yours,
E. E. Cureton
Chief of Owensboro Fire Department.

Chief E. E. Cureton
Owensboro, Ky., Fire Dept.

6 "Shuredry" Salvage Covers

Save $40,000 to $50,000 Water Damage!

Chief Cureton's experience with "SHUREDRY" Salvage Covers is typical, and tells an impressive story.

Wouldn't you like to try this in your town? Wouldn't a similar reduction in your annual report look good to you?

You can accomplish this, and at the same time reduce the insurance rates in your town, through salvage work.

Fire chiefs throughout the country have found that "SHUREDRY" covers are waterproof, easy to handle, not affected by changes in temperature, and most economical for salvage work.

"SHUREDRY" covers neither peel nor crack when left folded on the shelf for any length of time, as rubber covers do.

Write our nearest house for samples and prices.

Be sure to see the "SHUREDRY" Salvage Cover display in Booth 28½ at the Philadelphia Convention

Fulton Bag & Cotton Mills

Atlanta New Orleans Brooklyn St. Louis Dallas Minneapolis Kansas City, Kan.

Fight Fires *Before* They Start

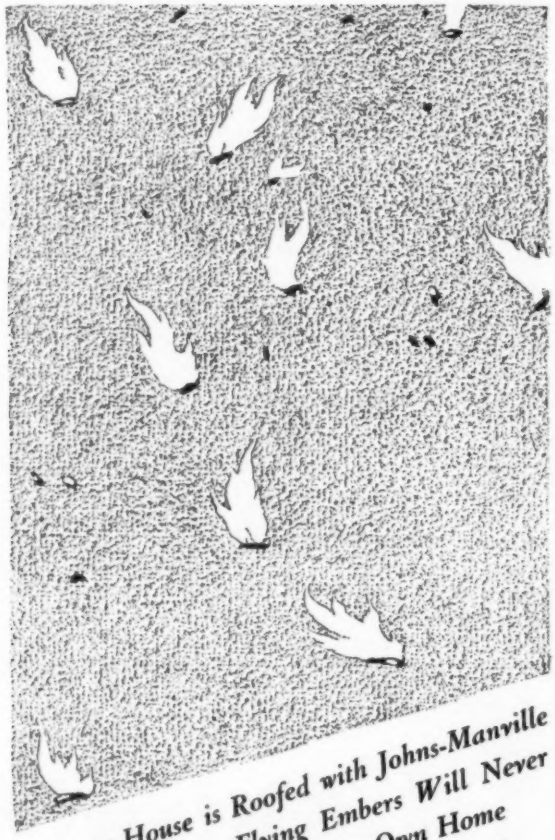
SAFETY, like charity, should begin at home. Do you, a fire fighter, follow the precautions that you recommend for others? Is your own roof fireproof?

At a surprisingly small cost your home can be roofed beautifully and forever with Johns-Manville Asbestos Shingles. They are moulded from solid rock — from Asbestos and Portland Cement—nothing else. So they cannot rot, curl, or wear out.

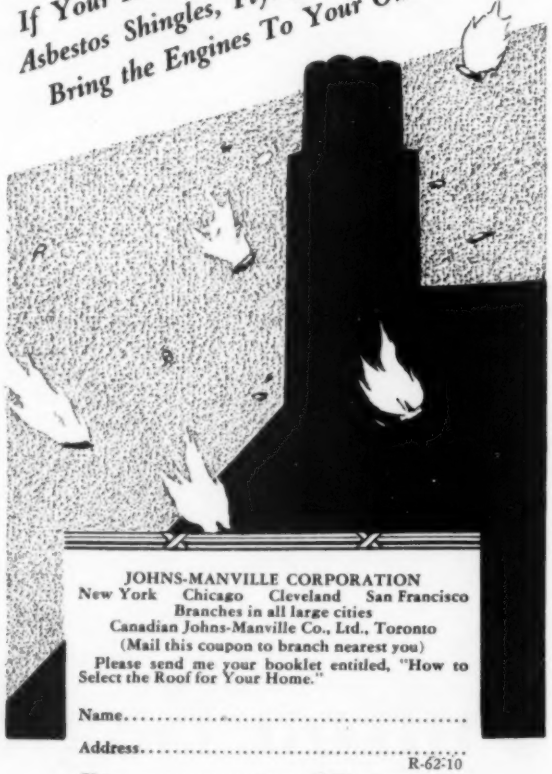
And, what is even more interesting to you as a fire fighter, they cannot possibly burn. You can't burn a stone wall—and there is nothing but stone in Johns-Manville Rigid Asbestos Shingles.

Your copy of our booklet—"How to Select the Roof for Your Home"—is waiting. Send for it, today.

MASTER of ASBESTOS
Johns-Manville
ASBESTOS SHINGLES



If Your House is Roofed with Johns-Manville Asbestos Shingles, Flying Embers Will Never Bring the Engines To Your Own Home

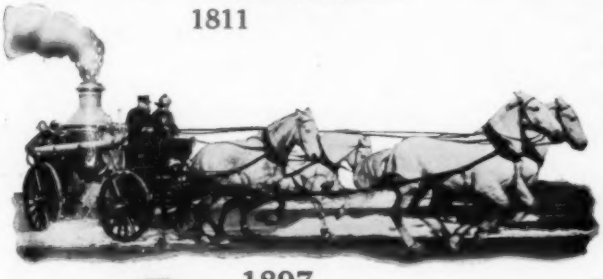


JOHNS-MANVILLE CORPORATION
New York Chicago Cleveland San Francisco
Branches in all large cities
Canadian Johns-Manville Co., Ltd., Toronto
(Mail this coupon to branch nearest you)
Please send me your booklet entitled, "How to Select the Roof for Your Home."

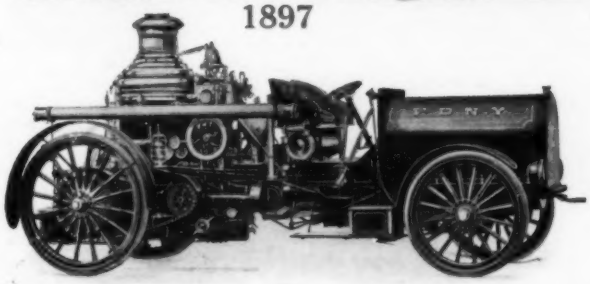
Name.....
Address.....
R-62-10
City..... State.....

The Evolution of "UNIVERSAL" Fire Apparatus

1811



1897



New York City **1911** Built by Nott

TO-DAY

Since 1879 the W. S. Nott Company have been building Fire Fighting Apparatus and Equipment to meet changing requirements of growing cities and municipalities, from the hand-drawn pump of the volunteer fireman to high-powered motor apparatus.

Through all these years the name "Nott" has stood for efficient equipment. Today the Nott "Universal" All-Service Combination defies comparison and deserves the consideration of every municipality that demands the best for their money.

The "Universal" is powerful, speedy and perfectly balanced, and embodies all that has proven best through many years of experience — real fire-fighting ability, reliability and handsome appearance.

Recent tests by the National Board of Fire Underwriters have proven its superiority in *efficiency* and *quality* over any apparatus of similar type being offered on the market today.

We invite you to study our specifications and to obtain opinions from users of "Universal" Fire Apparatus.

We can and will save you money if given an opportunity.

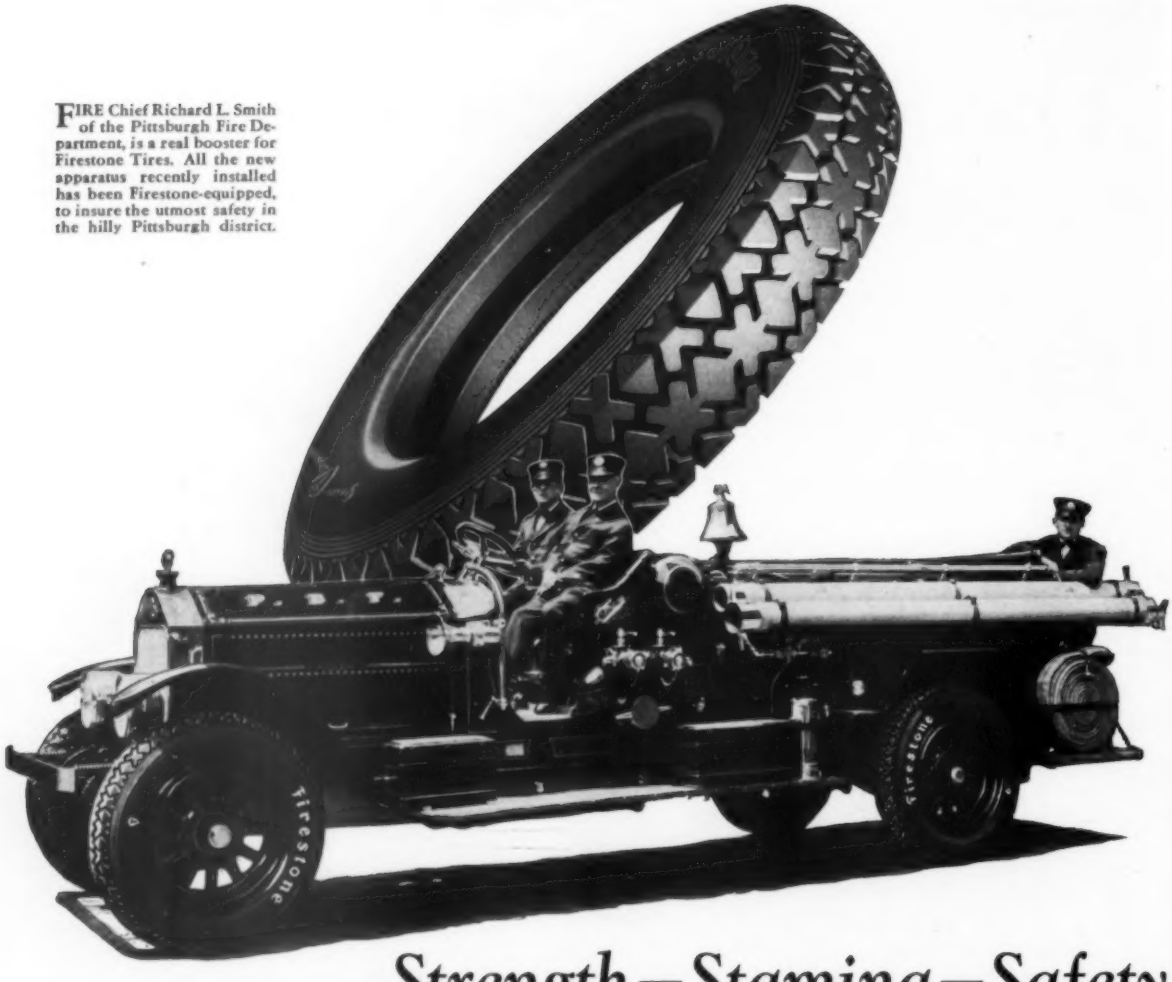
A request for further information will bring a prompt reply.

W. S. NOTT COMPANY

Pioneer Builders . . . Established 1879

MINNEAPOLIS, MINNESOTA

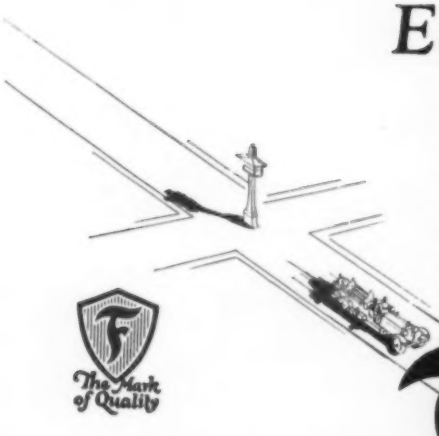
FIRE Chief Richard L. Smith of the Pittsburgh Fire Department, is a real booster for Firestone Tires. All the new apparatus recently installed has been Firestone-equipped, to insure the utmost safety in the hilly Pittsburgh district.



Strength—Stamina—Safety Equal to Any Emergency

The fastest mile ever run on wheels—207.55 miles per hour—was achieved on Firestone Gum-Dipped Tires. Ray Keech, the driver, and J. M. White, the designer and owner of the record-breaking car, would trust no other tires but Firestones to insure success in this terrific ordeal of speed and punishment.

The Indianapolis 500-mile Sweepstakes—America's battle of cars and tires—has been won for nine straight years, by nine different drivers, on Firestone Gum-Dipped Tires. Whenever life and property depend on tire performance, the choice is Firestone—the holder of all world records for speed, safety, endurance and mileage. In every fire department, tire safety is a big problem. Do not trust to luck. Specify Firestone Tires—the tires that have the extra strength and stamina due to the patented Gum-Dipping process, and extra toughness in the heavy safety tread. Talk to your local Firestone Dealer about these better tires and the money-saving service he is prepared to give your department.



The Mark of Quality

MOST MILES PER DOLLAR

Firestone

Gum-Dipped TIRES

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER ... Harvey S. Firestone

Baltimore, Elmira, Annapolis and Departments everywhere

Use KilSoot

TRADE MARK REG.

to Put-Out and Prevent Chimney Fires

KilSoot is the modern, American way to prevent and extinguish chimney fires.
No fuss . . . No muss . . . Little cost.

GO EASY WITH THAT CHEMICAL! YOU'RE RUINING EVERYTHING!
WHY DONTJA TRY THESE TIRE CHAINS? MAYBE THEY'LL WORK!
WHY ALL THE FUSS? WHEN ONE LITTLE PACKAGE OF KilSoot WILL DRIVE OUT THE TOUGHEST OLD CHIMNEY FIRE IN A JIFFY!

Read What These Chiefs Say—

They are old and continuous users of Kilsoot

"Threw the package into the furnace door and before I could get back upstairs, the fire was out. One man can do the work with KilSoot." ***Chief Taggart, Asbury Park, N. J.***

"Please rush enclosed order. On every chimney fire Kilsoot has done a perfect job. She certainly is a labor-saver for firemen. No more running ladders up onto roofs and losing valuable minutes." ***Chief Brookins, Norwich, N. Y.***

"In every case it has put out the fire immediately and cleaned the chimney, too. You may now ship 6 dozen each for our two fire companies and 18 dozen for the taxpayers." ***Chief Crandelmire, Brownville, Me.***

"Rush by express, twenty-five packages of KilSoot. Now, we do not have to run ladders up and waste a couple of hours on a chimney fire. It takes about fifteen minutes to kill the best of them." ***Chief Ticknor, Warrensburgh, N. Y.***

"I had occasion last night to use KilSoot and I was highly pleased in its performance. Instead of using ladders and putting our men on the pitched roof covered with snow and ice, I went to the first floor and put KilSoot in one kitchen range which had a good hot fire and your KilSoot did the rest. Kindly ship six dozen packages." ***Chief Eldridge, Johnson City, N. Y.***

Carry KILSOOT on All Your Apparatus

"I have been using KilSoot for three months and have had wonderful results. KilSoot has proven its worth in our department and all apparatus carry packages of KilSoot." ***Chief Fisher, Annapolis, Md.***

"We scattered KilSoot on the fire and in less than five minutes the chimney fire was completely out. We carry KilSoot on each piece of apparatus and do not mind fighting chimney fires now, for KilSoot makes it easy and quick work even in a howling gale." ***Chief Booth, Southold, N. Y.***

"Each piece of apparatus in our department is equipped with KilSoot and we use it with highly satisfactory results. KilSoot has justly gained the confidence of my men over a long period of use and I gladly recommend it to other departments. Enclosed find order for additional supply of KilSoot. We want to be fully prepared." ***Chief Espey, Elmira, N. Y.***

Is Your Department Fully Prepared?

KILSOOT CHEMICAL CO., Inc.

1834 Broadway, New York, N. Y.

Mail This Coupon Now!

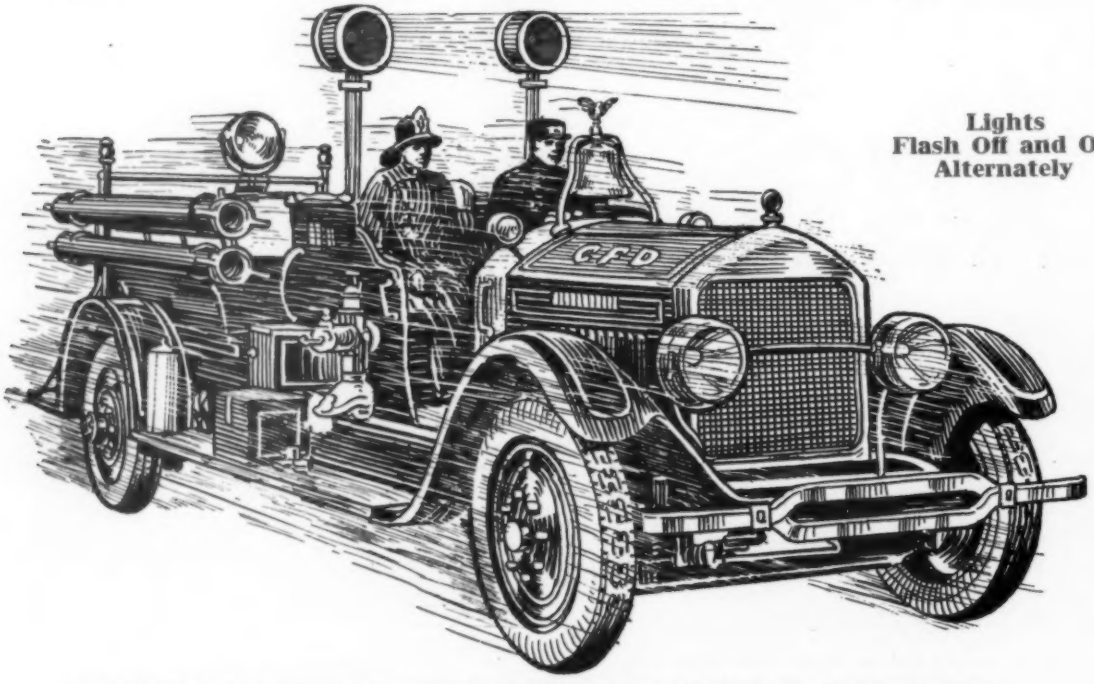
I Will Test KILSOOT With Your Guarantee! Send by paid parcel post one dozen packages to cost $6.

Name of Dept. .....

Address .....

Date .....

HERE SHE COMES!



Lights Flash Off and On Alternately

POSITIVE IDENTIFICATION WHEN YOUR FIRE APPARATUS IS EQUIPPED WITH

P-B RITE-A-WAY FLARE SIGNALS

NO DRAIN ON THE BATTERY—WORKS OFF OF THE INTAKE MANIFOLD

The installation of P-B Rite-A-Way Flare Signals will in no way impair the operation of the engine or effect any decrease in economy.

NO
- Adjustment necessary to carburetor.
- Loss in power of the engine.
- Increase in gas consumption.
- Attention required.
- Striking off the track for installation.
- Upkeep expense.
- Unsightly equipment.

THEY HELP
- To prevent accidents.
- To prevent delays.
- To prevent loss of life.
- To prevent destruction of property.
- Apparatus to arrive quickly.
- Clear traffic.
- Identify apparatus with signal.

P-B RITE-A-WAY

SUMMED UP (RIGHT OF WAY - RIGHT A WAY)

DEAR CHIEF: ACTION ON YOUR PART BY INSTALLING

P-B RITE-A-WAY FLARE SIGNALS

WILL SAFEGUARD YOUR MEN AND APPARATUS—SO SEND IN YOUR ORDER TODAY!

PRICE $48.00, F. O. B. FACTORY

P-B MANUFACTURING CO., Inc.

4567 Swan Ave. **Saint Louis, Missouri**

NATIONAL STANDARD CHEMICAL EJECTOR

Produces 1200 gal. foam per min. enough to smother this big oil fire in 1 min. 58 sec.

The exclusive features of this system demand your attention

NATIONAL STANDARD FOAM EJECTOR

NATIONAL FOAM SYSTEM INC.

Philadelphia, U.S.A.

Offices in All Principal Cities

The Junior Chemical Ejector operates on the same Duplex principle but only requires a one inch hose line and 35 lbs. water pressure. Uses less than 20 gal. water and makes over 150 gal. foam per min. Can be operated from Booster tank.

NATIONAL JUNIOR FOAM EJECTOR

First Safety Men

Burrell All-Service Gas Mask

Benjamin Franklin An Original Safety Man

Thousands of lives could have been saved had the Burrell All-Service Gas Mask and H-H Inhalator been available for accident prevention and resuscitation purposes when Benjamin Franklin founded the first fire department at Philadelphia in 1730.

The Burrell All-Service Gas Mask is officially approved by the United States Government for protection against carbon monoxide and all other poisonous gases and smoke.

The H-H Inhalator, endorsed by the Association of Police and Fire Surgeons and approved by the American Gas Association, is the most successful resuscitation device used today for administering carbogen (95% of oxygen and 5% carbon dioxide) to victims of asphyxia from gas, smoke, fumes, carbon monoxide, petroleum vapors, collapse and other causes.

Use the coupon to request information regarding these or any other M-S-A Safety Appliances.

[SEE THESE AND OTHER APPLIANCES AT BOOTH NO. 6]

Mine Safety Appliances Co.

Braddock Ave & Thomas Blvd. Pittsburgh, Pa.

H-H Inhalator in Use

MINE SAFETY APPLIANCES CO.
PITTSBURGH, PA.

Gentlemen:—Please send information regarding

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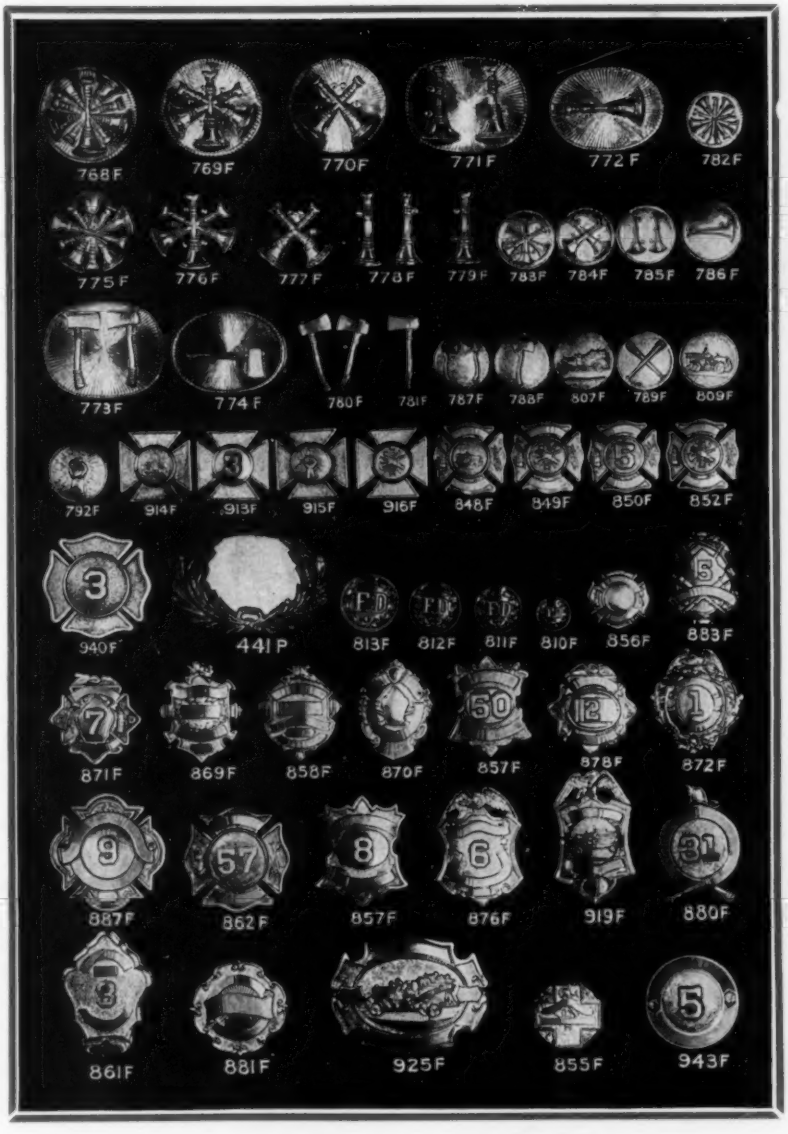
BRAXMAR BADGES

STANDARD FOR FIFTY YEARS

Fully Illustrated Catalog on Request



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900 Designs
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Special Designs Prepared For

PRESENTATION BADGES

C. G. BRAXMAR CO., INC.

Office and Factory

242 WEST 55th ST. NEW YORK, N. Y.

"FIRE-KILLER"

(TRADE MARK)

Dry Chemical

has been thoroughly tested over a period of years and is guaranteed to be a positively non-caking fire extinguishing powder.

Especially adapted for use in pressure apparatus, fire pails, and hand extinguishers.

Unexcelled for gasoline, oil and grease Fires. For automobile and chimney use it is acknowledged to be the best extinguishing agent available.

Thoroughly protected against infringement.

Write for prices in bulk quantity.

Protex Chemical Co.

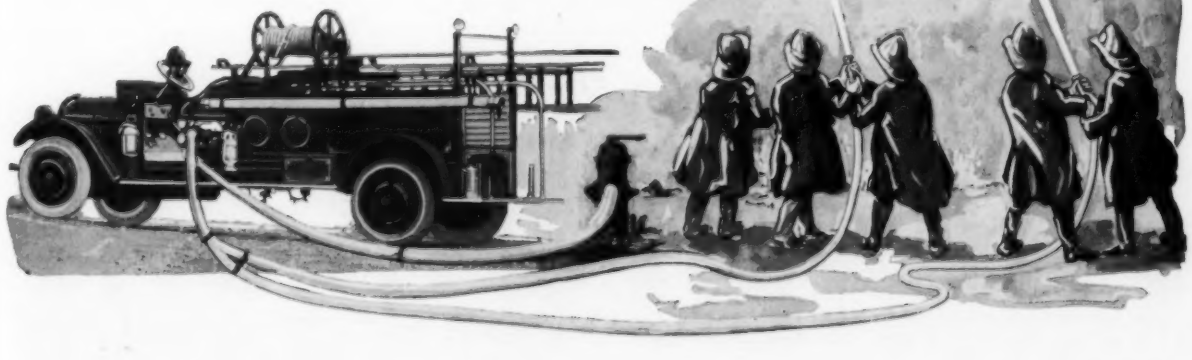
1674 Broadway
New York City

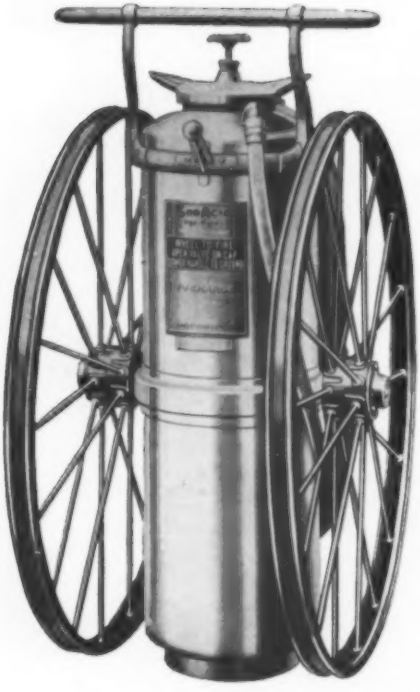
BOYER means quality

BOYER offers you modern, efficient apparatus with a guarantee of performance which warrants your consideration.

Our staff of apparatus engineers is available for consultation at any time without obligation.

Boyer Fire Apparatus Co.
General Offices
Logansport, Indiana





Are You Getting These Advantages?

In addition to wheels, French & Hecht manufacture spindle bands and top bands for chemical fire engines.

Leading makes of chemical fire engines are now equipped with these standardized French & Hecht parts.

French & Hecht assembly of steel wheels and bands is approved by the Underwriters Laboratory.

CHEMICAL fire engines equipped with French & Hecht steel-spoke wheels and spindle bands offer these advantages:

French & Hecht wheels are designed especially for this use by an organization that specializes in design and construction of steel wheels.

Because of their special construction, particularly the fastening of spokes to hub and tire, French & Hecht steel wheels are stronger and lighter than other types of wheels.

They are mechanically correct and accurately made.

These wheels are made in large quantities in the most efficient factory in America specializing in steel wheels. So efficient are French & Hecht manufacturing facilities that a distinct saving in cost of wheels can be effected in most instances for manufacturers of wheeled equipment. Any information concerning wheels will be gladly supplied. Write.

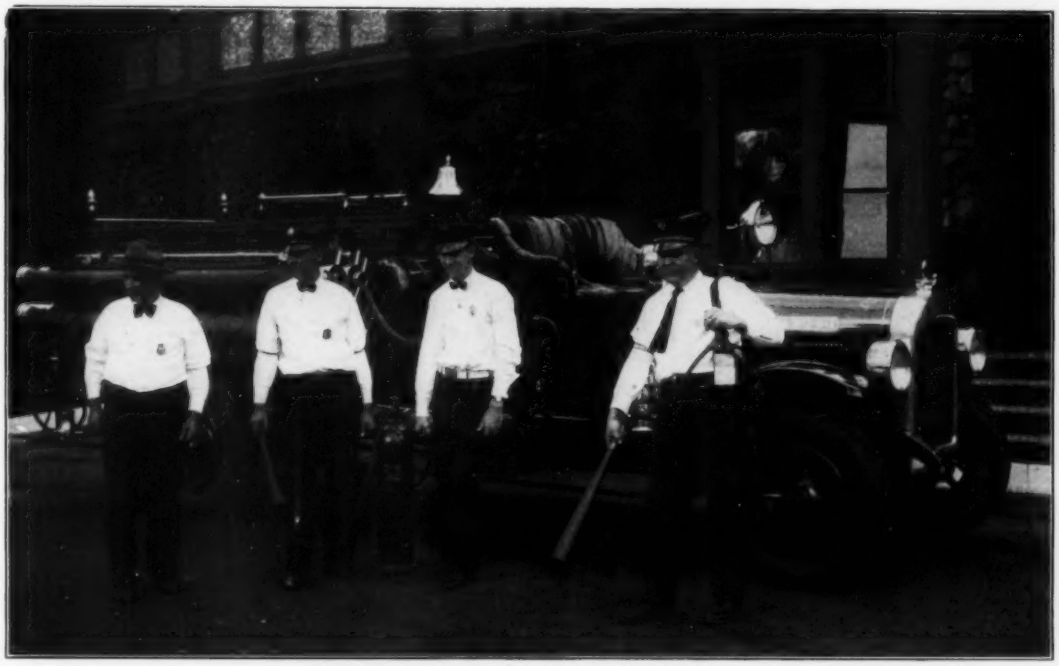
FRENCH & HECHT, Inc.

Wheel Builders Since 1888

DAVENPORT, IOWA SPRINGFIELD, OHIO

FRENCH & HECHT

STEEL WHEELS



Chief Nichols and his Barrington, R. I. Department are delighted with Fyre-Freez

Announcing—

a new and greatly superior method of extinguishing fires,—without spoilage or any objectionable after-effects, through use of the marvelous new scientific extinguisher—

Fyre-Freez

Approved by Associated Factory Mutual Laboratory, Underwriters' Laboratories, Factory Insurance Association, U. S. Bureau of Standards, Electrical Testing Laboratory, Bureau of Fire Prevention, New York City, etc., etc.

Destroys nothing but fire

Fyre-Freez, freezing fire at 110° below zero, leaves no mark, discoloration or residue. Absolutely harmless, effective in all temperatures and does not deteriorate. Especially well adapted for oil burner fires, cellar fires, partition fires, etc.

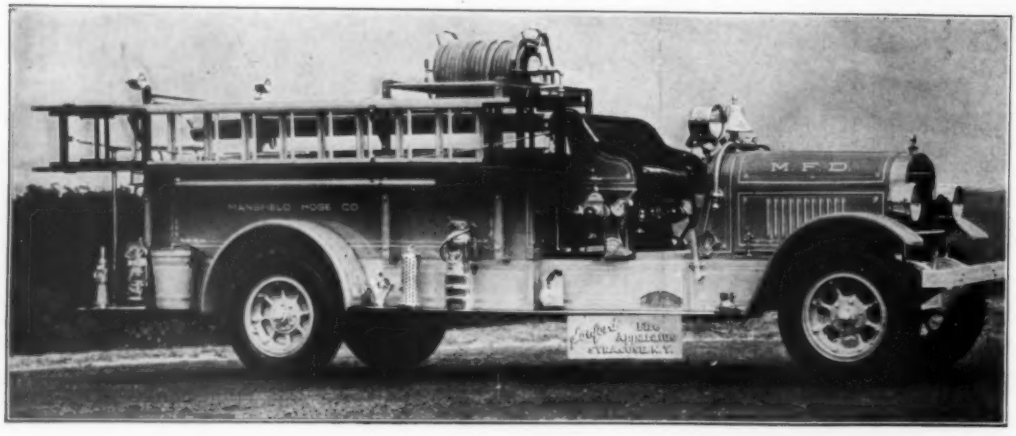
So far ahead of existing types of extinguishers that we are anxious to tell you all about it. For further information address:

Type D for Fire Trucks

Fyre-Freez Corporation

17 W. 46th St., New York, N. Y.

THE GREATEST VALUE IN AMERICA!



SANFORD SERVICE SATISFIES

Sanford

FIRE APPARATUS

Progressive Communities Everywhere are Placing "Sanford" on Guard

Ask a SANFORD-PROTECTED Community.

Users' Names furnished upon request.

SANFORD Fire Apparatus is built as Fire Apparatus should be built—strong, durable and of imposing appearance. Efficiency and simplicity of operation make it possible for SANFORD Apparatus to stand every test. SANFORD Service is dependable. The price places it within reach of villages and towns everywhere. SANFORD Pumping Apparatus is built in 500, 600 and 750 gallon capacities. Also builders of City Service and other types of Fire Apparatus.

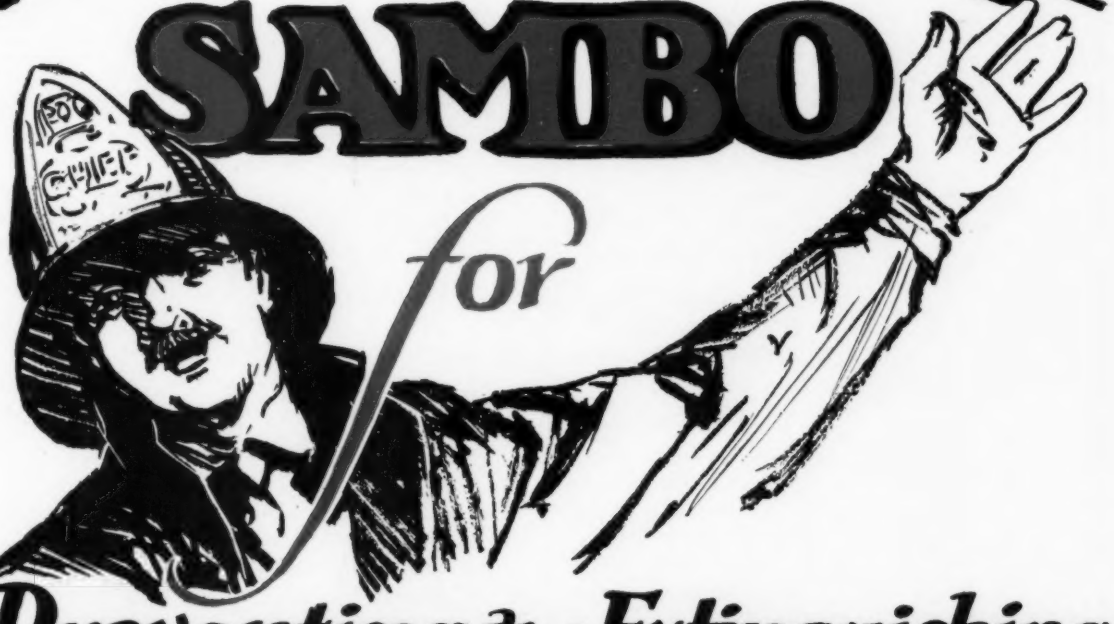
Write for further information.

SANFORD MOTOR TRUCK CO.

SYRACUSE, N. Y., U. S. A.

After all there is only ONE!

SAMBO



for

Preventing and Extinguishing CHIMNEY FIRES

TODAY the standard method of chimney fire extinguishing in hundreds of cities is the SAMBO way.

Quick, immediately effective—SAMBO puts out any chimney fire. It saves departmental costs, too. No more climbing over icy roofs, no hooks or chains, no dirt.

The SAMBO preparation is simply scattered on the live coals at the source of the blaze, resulting in a quick recall of the apparatus.

Chief Sullivan, Utica, N. Y.: "SAMBO is positively the best that has been brought to our attention."

Chief Casey, Troy, N. Y.: "I am glad to recommend SAMBO to the people of Troy."

Chief Coombs, Syracuse, N. Y.: "SAMBO possesses all the merits you claim for it."

Chief Coffee, Dixon, Ill.: "Best I've found in 23 years for fighting chimney fires."

Chief Quinn, Martinsburg, W. Va.: "We're 100% for SAMBO".

Chief Casey, Abington, Mass.: "The best physic for any sick chimney".

The "Little Black Fireman" says: "Some folks doan have much sympathy fo' de fire department until dey has a fire."

G. F. AUSTIN COMPANY, Inc.
NORWALK *Manufacturers* CONN.

Clip the coupon

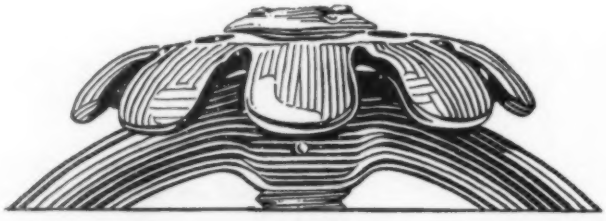
Mr. Sambo
c/o G. F. Austin Co., Inc.,
Norwalk, Conn.

You can join my department, so come 3 dozen strong and we can certainly afford to pay you the $12 you ask for.

Chief.....

City.....

State.....



PHOMENE AND FYRE-FREEZ

TWO SYSTEMS AUTOMATIC OR MANUAL FOR EXTINGUISHING FIRE WITH THE DEPENDABILITY OF GLOBE BACK OF EACH

PHOMENE

A single powder Foam System for Oil Refineries, Oil Storage Tanks, Dip Tanks, Spray Booths, Varnish Plants, Furniture, Automobile and Paint Factories and Extra Hazardous Flammable Liquid Fires.

"It smothers the fire"

FYRE-FREEZ

A Fire Extinguishing Apparatus using Carbon Dioxide as the Extinguishing medium, for Marine, Mine, Electrical, Alcohol, Flammable Liquid Fires and numerous others. It leaves no residue and is not injurious to life.

"It destroys nothing but fire"

APPROVED BY INSURANCE INTERESTS

For further information address

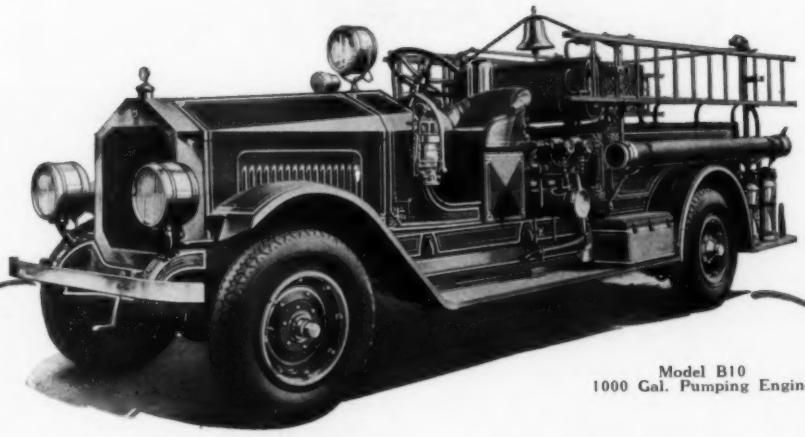
GLOBE AUTOMATIC SPRINKLER COMPANY

2035 Washington Avenue, Philadelphia, Pa.

SALES AND ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

With Eastern Fire Chiefs it's

MAXIM



Model B10
1000 Gal. Pumping Engine

The Big Pumper for the Big Job

Eastern Fire Chiefs throughout New England and neighboring states prefer MAXIM. Their orders come in so fast they keep our plant working to the limit and even then we can't always keep up to the demand. Such popularity must be deserved.

Here are some of the reasons why MAXIM equipment is constantly growing in greater demand with Fire Departments who know its value.

Four wheel brakes with vacuum booster brake to meet the ever increasing traffic demand for better control.

High pressure rotary type pump with pump cams controlled by pilot gears.

MAXIM automatic relief valves on each discharge line.

Engine—big and rugged, smoothly delivering power and more power.

MAXIM MOTOR COMPANY
MAXIM
MAXIM MOTOR COMPANY
Middleboro, Mass.

Better Shirts for Fire Fighters!

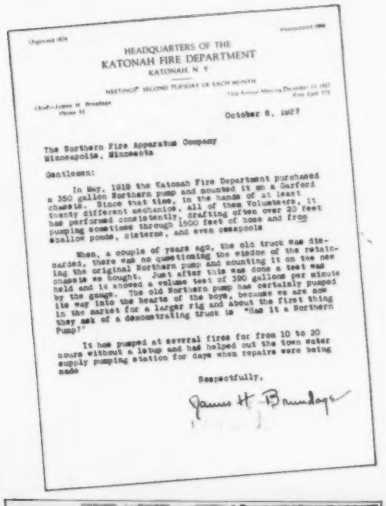
FOR dressy uniformity and economy make a Signal part of your uniform. There is no better shirt for firemen than the Signal Two Collar style with either soft or laundered detachable collars to match. When one collar becomes soiled, you simply change to the other. Fewer washings are required; the shirt gives double wear and service; you save money.

There are Signals with collars attached too; no matter what style or pattern is selected, we promise to improve the appearance of your department and give you the fullest measure of shirt satisfaction. Write for samples of the ten TubTest patterns.

To Fire Chiefs

A Signal has been selected as the regulation uniform shirt in Chicago, Cleveland, Minneapolis, St. Paul, Indianapolis, Columbus, Toledo, and in other large cities. Write us to submit our complete plan for dressy uniformity. No obligation.

SIGNAL SHIRT CO.
RACINE, WISCONSIN



HEADQUARTERS OF THE
KATONAH FIRE DEPARTMENT
KATONAH, N. Y.

October 8, 1927

The Northern Fire Apparatus Company
Minneapolis, Minnesota

Gentlemen:

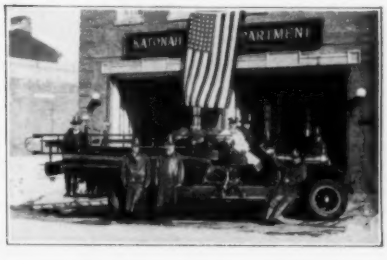
In May, 1918 the Katonah Fire Department purchased a 350 gallon Northern pump and mounted it on a Garford chassis. Since that time, in the hands of at least twenty different mechanics, all of them Volunteers, it has performed consistently, drafting often over 20 feet pumping sometimes through 1500 feet of hose and from shallow ponds, cisterns, and even cesspools

When, a couple of years ago, the old truck was discarded, there was no questioning the wisdom of the reticking the original Northern pump and mounting it on the new chassis we bought. Just after this was done a test was held and it showed a volume test of 390 gallons per minute by the gauge. The old Northern pump has certainly pumped its way into the hearts of the boys, because we are now in the market for a larger rig and about the first thing they ask of a demonstrating truck is "Has it a Northern Pump?"

It has pumped at several fires for from 10 to 20 hours without a letup and had helped out the town water supply pumping station for days when repairs were being made

Respectfully,

James H. Brundage



When Pavements Rang To Galloping Hoofs

WHO did not thrill at the sight of the fleet trio who drew the "engine" rocking and careering through hastily cleared streets? Bells clanged, wheels rumbled, mothers pulled excited children back from the curb. Taut reins guided the eager chargers; the driver — a mighty man was he — coolly took the corner on two wheels. Behind streamed a fearful cloud of smoke and sparks.

In those days, you just naturally dropped everything and went to the fire. Now — well, it's too much trouble. With the passing of the fire horse, fire fighting's most picturesque period was over.

In this more efficient age, those in the know insist upon Northern Pumps. Just as the motor truck is superior to the old fashioned horse-drawn engine, so the Northern Rotary outshines other equipment — in efficiency, dependability, service.

Chief Brundage's letter tells why Northerns are sold, and *stay* sold. Read it.

NORTHERN
ROTARY
PUMPS
"MORE GALLONS PER HORSE POWER"

THE NORTHERN PUMP COMPANY

900 EIGHTEENTH AVE. N. E. **MINNEAPOLIS, MINNESOTA**

A New Method
For Fighting Fire with Foam
Automatically or Manually

For the extra hazardous risk where flammable liquids are used or stored.

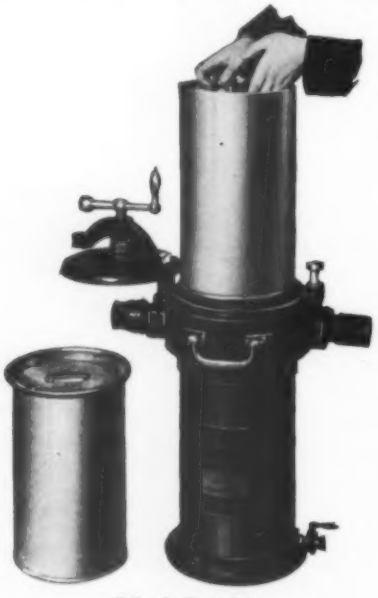
Fire protection engineers recognize that one of the most efficient weapons with which to fight fire on the extra hazardous risk is

THE Phomene ACCUMULATOR

Works Faster Than Fire!

This modern foam unit is charged with a dry powder, packed in a special container for direct insertion in the Accumulator. A water connection is made to it from the plant or fire mains and foam is distributed either through fixed pipe or through hose.
The use of a dry powder charge gives the following unusual advantages:

1. **Small size in comparison with large foam discharge.**
2. **Can be used in unheated occupancies or out of doors. Dry powder is not affected by freezing temperatures.**
3. **Ease of recharging listed below.**
4. **Impossibility of error in charging. The charge is properly compounded and thoroughly mixed by the manufacturer.**
5. **Foam is immediately available at the first flash of fire, but in addition, practically continuous foam stream can be maintained as long as recharges are available.**



Model 401

Listed as Standard by Underwriters' Laboratories. Approved by U. S. Steamboat Inspection Service.

One of several new and exclusive Phomene Foam Making Units for fighting fire with foam.

Showing Method of Charging

An important feature of this Model 401 is its method of charging. The head is so designed as to swing on a vertical hinge to one side (as shown), permitting full opening to the body of the apparatus. The powder container, especially designed for this model, is inserted directly into the Accumulator. Recharging is done in half a minute.

The Phomene Accumulator is a necessity for the unusual hazard.
Pyrene Manufacturing Co. makes fire equipment for every hazard — both portable and stationary.

See Our Exhibit
Spaces 26-27

Convention of International Association of Fire Chiefs

PYRENE MANUFACTURING COMPANY
NEWARK, NEW JERSEY

Branches: Atlanta Chicago Kansas City San Francisco

FIRE ENGINEERING

(A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER)

The Journal of the Fire Protection Profession

VOLUME LXXXI | OCTOBER 17, 1928 | NUMBER 21

Philadelphia's Modern Fire Department

Interesting History of the Fire Service of the City— Its Present Efficient Condition—The Various Divisions

By ROSS B. DAVIS, Chief, Fire Department, Philadelphia, and President of the I. A. F. C.

AS Philadelphia is the Convention City of the I. A. F. C. this year, and as its Fire Chief is president of the organization, a short description of the Fire Department and a resumé of its interesting history will be of interest.

The Bureau of Fire is one of the bureaus which makes up the Department of Public Safety. The men and equipment of the bureau may be used for the following purposes:

1. Preventing fires.
2. Extinguishing fires.
3. Assisting the police in quelling riots, strikes, etc.
4. Assisting in emergencies (such as collapse of buildings, bridges, etc.

In order to carry out these duties, the force is organized somewhat along military lines, as follows:

1. Headquarters Staff.
2. Fire fighting force (which includes engine, truck, water tower, chemical high pressure companies and fire boats).
3. Fire prevention inspectors (working with the Fire Marshal).
4. Training School (for instructing newly appointed men in the duties of a fireman, and for instructing older men in the use of new appliances).
5. Record Division (business procedure, payrolls, contracts, etc.)
6. Repair Division (repair and maintenance of apparatus and equipment).
7. Signal Service (sending of messages by wire; supervised by Electrical Bureau).
8. Medical Division (medical care and treatment for members of force and persons injured on the fire grounds).
9. Stable Division (purchase and care of horses).

The Uniformed Force and Apparatus

At the present time we have an organized, uniformed, and schooled force of 1985 manning 69 engine companies, 24 truck companies, 5 pipe line companies, 3 fire boat companies, one emergency crew, one rescue squad, and one detail to the Philadelphia Hospital.

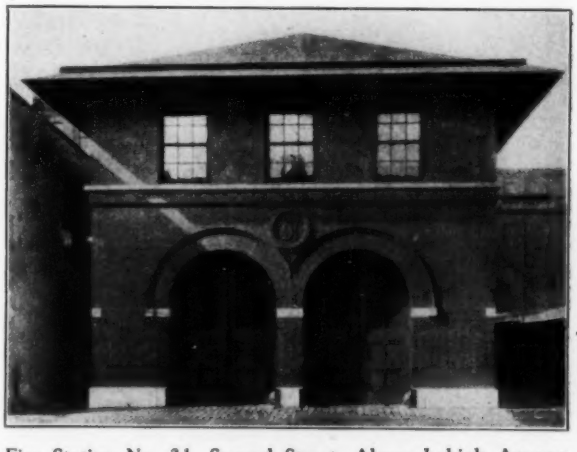
The city is divided into eleven districts; the fire fighting force in each being organized as a battalion. Each district is commanded by a battalion chief who is at all times responsible for the efficiency and discipline of men under his command.

The distribution and the rating of the uniformed force is as follows: One chief engineer, one deputy chief, eleven battalion chiefs, 99 captains, 100 lieutenants, 49 steam engineers, six marine engineers, twelve marine firemen, six pilots, one instructor fire school, one instructor auto school and 1,698 hosemen or laddermen. Total fire fighting force, 1,985.

The motor apparatus of the bureau is as follows:

Motor driven, gasoline pumping engine and hose wagons	72
Tractor drawn steam engines	17
Motor driven combination hose and chemical wagons	79
Combination hose wagon (with booster pump)	1
High pressure wagons	5
Aerial trucks	30
City service trucks	2
Water towers	3
Chiefs' automobiles	20
Miscellaneous	12
Total motor apparatus	241

The bureau is 100% motorized; during the past four years $1,296,996.67 was expended for the purchase of



Fire Station No. 31, Second Street, Above Lehigh Avenue, Philadelphia

new motor fire apparatus, including the acquisition of two fire boats.

The fire boats, J. Hampton Moore, and the Rudolph Blankenburg, are two of the most modern equipped pieces of floating fire fighting apparatus on the waters.

The total number of alarms responded to during the year was 8,976 with a property loss amounting to $5,572,467. The total expenditures of the bureau was $4,597,590.85.

The task of the modern fire fighter runs parallel to the modern soldier. The firemen's foe has kept pace

with the advance of civilization. The danger which a fireman faces every day and night in the performance of his duty is great. The risks which he must take are many. He is supplied with the best possible tools and equipment, but tools and equipment are not enough; he must know how to use them so as to conquer the fire in the shortest possible time and with the greatest safety to himself.

The great increase in the size of buildings during the last few years, and the complicated manner in which

Fire Station No. 34, at Twenty-seventh above Thompson Streets, Philadelphia

they are now arranged, have also made special training not only desirable but mandatory.

Philadelphia Training School for Fire Service—Organized 1913

The Training School was established, then, to accomplish these results: First, to give the younger men a chance to profit by experience of men of long service, and second, to give the older men an opportunity to exchange experiences and to discuss new methods of checking the common enemy—fire.

All new men report to the training school after appointment. Although they are assigned to companies and stations immediately after entering the service, they attend the training school from 9:30 a. m. to 12 noon, and from 1 p. m. to 4:30 p. m., for forty consecutive days. (Saturdays and Sundays excepted).

The course of training comprises the following:

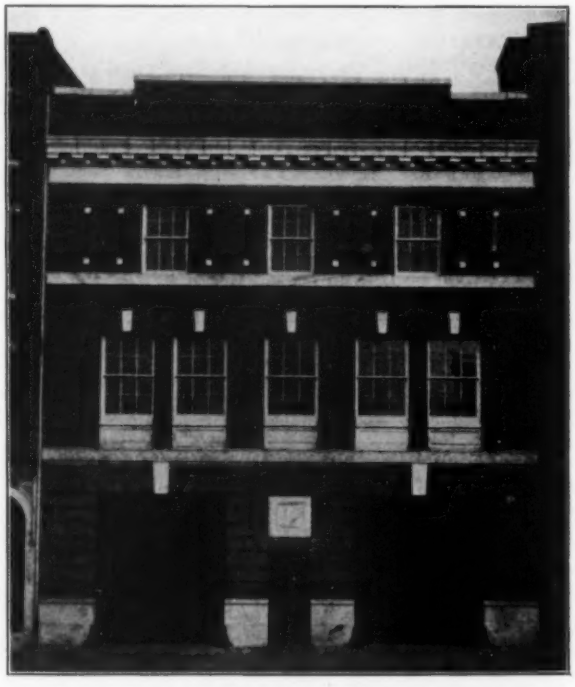
Discipline, respect for authority, military and physical exercises; the standard name of tools and their uses, how and when to use same; tying of approved knots and hitches; applying same to tools; to hoist to upper story or roofs portable ladder exercises; lifting, carrying, raising, carrying vertically and lowering ladders; scaling and hook ladder exercises; stretching in 2½inch hose lines to building, coupling on hose pipe and hoisting same to upper story or roof over hose roller; applying a rolling hitch as for service; siamese hose lines for play-pipe service; removing a burst length of hose from line under the various conditions met with on the fire ground; the operation of high and low pressure hydrants; stretching in with 3½-inch hose lines; placing same in service using paradox hose holder; the use of the three-way and the operation of the valves; the placing of the various apparatus as for service; making suction connections for lifting and forcing water.

Rescue Exercises: Removing a person from an upper story or roof by the use of ropes; carrying a person on back out of window to ladder and descend to ground (method tying wrists); lowering a person from an upper story window by lashing to a ladder, board, shutter, etc., by the use of ropes; removing a supposed invalid or injured person by carrying on arms down interior stairs.

A lecture and demonstration by the Chief Surgeon on first aid is included. Examination is held on the following subjects: General Knowledge, Proficiency as Ladderman, High Pressure Service, Tools and Their Uses, Aptitude for the Service, Proficiency as Hoseman, Tying Approved Knots and Hitches, Rescue Exercises, Alacrity and Obedience.

Fire Alarm Signal Service

The central alarm exchange is located at Room 626, City Hall. The chief of the Electrical Bureau is glad to have the alarm system explained to any inquiring citizen. There are fifty-four signal circuits, fourteen joker circuits, sixteen alarm circuits and eight police telegraph circuits. The fifty-four signal circuits are the lines connecting the three thousand and ninety-three alarm boxes with the central stations. About 2,609 of these are ordinary street boxes, 211 of which are known as auxiliaried alarm boxes. The latter are located near public buildings, assembly halls, institutions, hospitals,



Fire Station No. 32, Sixth and Locust Streets, Philadelphia

etc., and are connected with one or more signal boxes therein. The remaining 484 are private alarm boxes.

The fourteen joker circuits are the lines used in sending signals from the central station to the various fire stations. The signals are received at fire stations on a small electric bell known as a "joker."

The sixteen alarm circuits are the lines used to forward box alarms received at the Central Station to all stations. These signals are received at stations on a

(Continued on page 966)

Where Does Civil Service Stand at Present in the Fire Service

A Nation-wide Survey Among Large Cities Shows Some Interesting Facts

IN order to determine the exact status of civil service promotional examinations in fire departments in this country, particularly in the larger cities, this journal has just completed a nation-wide survey, the results of which are given below.

Practically all cities in this country having a population of 100,000 (1920 census) are included in the tablulation. The actual population represented is well over 50% of the total population of the country.

Civil service examinations as a method of determining which men in the fire department are deserving, and fitted, for promotion have proven themselves. While there has been a great deal of opposition to the inauguration of fire department promotional examinations, the results accomplished have shown, beyond all question, that civil service has come to stay, and that its results are certain.

True, there is still plenty of room for improvement in the type of questions asked, but great headway is being made at the present time toward a standard which will prove fairer to the candidate, and make it possible for the examiner to give each man just what he is entitled to in the way of ratings.

Cities Included in Compilation

One hundred and fifteen cities are included in the compilation herewith. Of these cities ninety make fire department promotions through civil service examinations while twenty-five do not. In other words, from the standpoint of numbers of cities having civil service in the fire department, 78% are so equipped.

But, from the standpoint of population of these cities, 95% of the population promote their firemen by civil service examination. This is another way of saying that approximately 95% of all firemen and fire officers in cities of 100,000 and over population in this country receive promotion now through means of civil service examinations.

Of particular interest is the situation in the southern states, where eighteen reported. Of these eighteen, thirteen have no civil service, while five have. Thus the percentage of departments in the southern states having civil service, from the standpoint of the number of cities, is 28%.

Of northern cities only twelve have no civil service while eighty-five have. Thus approximately 85% of the northern cities make promotions through civil service examinations. The southern cities which employ civil service examinations, include Augusta, Ga.; Baltimore, Md.; Fort Worth, Tex.; Norfolk, Va.; and Wheeling, W. Va.

Another interesting kink in the situation is shown in the case of the state of Connecticut where four large departments reported. Of these four departments, only one, New Haven, makes promotions by civil service tests.

In the entire northern section of the country only two large cities are not in the civil service column—Detroit, Mich., and Providence, R. I.

A comparatively small percentage of cities having examinations for promotion of officers extend the civil service rules to the position of chief. This has undoubtedly more than a little to do with the efficiency of the department, for where the tenure of the office of chief is uncertain, or where the chief is removable for political reasons, discipline, and consequently efficiency, suffer.

Civil Service Builds Efficiency

That civil service builds efficiency, and produces a higher calibre of officer, cannot be denied. The experience of New York is typical. In this department all ranks are covered by civil service, including the office of chief. Chief John Kenlon, the present civil service selection for head of the New York fire department, has shown by his work that protecting the head of the department by civil service produces the highest efficiency obtainable. This particular department was never at a higher standard than since the present chief has been in charge.

Many of the larger cities not having civil service in their departments at the present time may be expected to eventually fall in line. Some of the most progressive chiefs of the country, and who serve in such departments, favor civil service. For instance, Chief R. D. Gambrell, head of the Dallas, Texas, Fire Department, approves of making all promotions by civil service examin-

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ations, and he is of the opinion that it is the only proper way to determine the fitness of members for promotion, and to eliminate politics from the department. Chief Gambrell is, at the present time, urging the adoption of civil service by his city.

Chief Louis Behrens, of the Charleston, S. C., department, is a strong endorser of civil service. At the last convention of the South Carolina State Firemen's Association the subject of civil service came up for consideration, and at the urge of Chief Behrens, it was unanimously adopted that the Legislative Committee prepare a bill, placing every fire department in the state under civil service, and press for its enactment at the session of the legislature held in 1930. This bill, of course, comes up for discussion at the next convention of the South Carolina firemen to be held in Columbia, S. C., in the early part of 1929 and during the early part of 1930, the association expects to have civil service in South Carolina.

Present Status of the Civil Service for Various Ranks in Larger Fire Departments of This Country

CITY	State	Population 1920 Census	Civil Service	Ranks Included: Lieutenant	Captain	Batt. Chief	Deputy Chief	Asst. Chief
Birmingham	Ala.	178,806	No	..	..	..	..	..
Mobile	Ala.	60,777	No	..	..	..	..	..
Montgomery	Ala.	43,464	No	..	..	..	..	..
Little Rock	Ark.	65,142	No	..	..	..	..	..
Berkley	Cal.	56,036	No	..	..	..	..	..
Fresno	Cal.	45,086	Yes	Y	Y	Y	Y	Y
Oakland	Cal.	216,261	Yes	Y	Y	Y	O	Y
San Diego	Cal.	74,683	No	..	..	..	..	..
San Francisco	Cal.	506,676	Yes	Y	Y	Y	O	Y
Stockton	Cal.	40,296	No	..	..	..	..	..
Denver	Colo.	256,491	Yes	Y	Y	O	Y	Y
Bridgeport	Conn.	143,555	No	..	..	..	..	..
Hartford	Conn.	138,036	No	..	..	..	..	..
New Haven	Conn.	162 537	Yes	Y	Y	Y	Y	Y
Waterbury	Conn.	91,715	No	..	..	..	..	..
Jacksonville	Fla.	91,558	No	..	..	..	..	..
Atlanta	Ga.	200,616	No	..	..	..	..	..
Augusta	Ga.	52,548	Yes	Y	Y	O	O	Y
Savannah	Ga.	83,252	No	..	..	..	..	..
Chicago	Ill.	2,701,705	Yes	Y	Y	Y	Y	Y
Rockford	Ill.	65,651	Yes	Y	Y	Y	Y	Y
Springfield	Ill.	59,183	Yes	O	Y	O	O	Y
South Bend	Ind.	70,983	No	..	..	..	..	..
Des Moines	Ia.	126,468	Yes	Y	Y	No	No	Y
Sioux City	Ia.	71,227	Yes	Y	Y	O	O	Y
Kansas City	Kan.	101,177	Yes	No	Y	No	Y	Y
Topeka	Kan.	50,022	No	..	..	..	..	..
Portland	Me.	69,272	Yes	Y	Y	O	Y	Y
Baltimore	Md.	733,826	Yes	Y	Y	Y	Y	O
Arlington	Mass.	18,768	Yes	Y	Y	O	Y	Y
Attleboro	Mass.	19,731	Yes	Y	Y	O	Y	Y
Beverly	Mass.	22,561	Yes	Y	Y	O	Y	Y
Boston	Mass.	748,060	Yes	Y	Y	O	Y	O
Brocton	Mass.	66,254	Yes	Y	Y	O	Y	Y
Brookline	Mass.	37,748	Yes	Y	Y	O	Y	Y
Cambridge	Mass.	109,694	Yes	Y	Y	O	Y	Y
Chelsea	Mass.	43,184	Yes	Y	Y	O	Y	Y
Chicopee	Mass.	36,214	Yes	Y	Y	O	Y	Y
Everett	Mass.	40,120	Yes	Y	Y	O	Y	Y
Fall River	Mass.	120,485	Yes	Y	Y	O	Y	Y
Pitchburg	Mass.	41,029	Yes	Y	Y	O	Y	Y
Gloucester	Mass.	22,947	Yes	Y	Y	O	Y	Y
Haverhill	Mass.	53,884	Yes	Y	Y	O	Y	Y
Holyoke	Mass.	60,203	Yes	Y	Y	O	Y	Y
Lawrence	Mass.	94,270	Yes	Y	Y	O	Y	Y
Leominster	Mass.	19,745	Yes	Y	Y	O	Y	Y
Lowell	Mass.	112,759	Yes	Y	Y	O	Y	Y
Lynn	Mass.	99,148	Yes	Y	Y	O	Y	Y
Malden	Mass.	49,103	Yes	Y	Y	O	Y	Y
Medford	Mass.	39,038	Yes	Y	Y	O	Y	Y
New Bedford	Mass.	121,217	Yes	Y	Y	O	Y	Y
Newton	Mass.	46,054	Yes	Y	Y	O	Y	Y
No. Adams	Mass.	22,282	Yes	Y	Y	O	Y	Y
Northampton	Mass.	21,951	Yes	Y	Y	O	Y	Y
Peabody	Mass.	19,551	Yes	Y	Y	O	Y	Y
Pittsfield	Mass.	41,763	Yes	Y	Y	O	Y	Y
Quincy	Mass.	47,876	Yes	Y	Y	O	Y	Y
Revere	Mass.	28,823	Yes	Y	Y	O	Y	Y
Salem	Mass.	42,529	Yes	Y	Y	O	Y	Y
Somerville	Mass.	93,091	Yes	Y	Y	O	Y	Y
Springfield	Mass.	129,614	Yes	Y	Y	O	Y	Y
Taunton	Mass.	37,137	Yes	Y	Y	O	Y	Y
Waltham	Mass.	30,915	Yes	Y	Y	O	Y	Y
Westfield	Mass.	18,604	Yes	Y	Y	O	Y	Y
Worcester	Mass.	179,754	Yes	Y	Y	O	Y	Y
Detroit	Mich.	993,678	No	..	..	..	..	..
Grand Rapids	Mich.	137,634	Yes	Y	Y	Y	No	O
Minneapolis	Minn.	380,582	Yes	Y	Y	Y	Y	O
St. Paul	Minn.	234,698	Yes	O	Y	Y	O	O
St. Louis	Mo.	772,897	No	..	..	..	..	..
Lincoln	Neb.	54,948	No	..	..	..	..	..
Manchester	N. H.	78,384	No	..	..	..	..	..
Camden	N. J.	116,309	Yes	..	Y	Y	Y	..
East Orange	N. J.	50,710	Yes	Y	Y	..	..	Y
Elizabeth	N. J.	95,783	Yes	Y	Y	Y	Y	..
Jersey City	N. J.	289,103	Yes	..	Y	Y	Y	..
Newark	N. J.	414,524	Yes	..	Y	Y	Y	..
Paterson	N. J.	135,875	Yes	..	Y	Y	Y	..
South Orange	N. J.	7,274	Yes	..	..	..	..	..
Trenton	N. J.	119,289	Yes	Y	Y	..	..	Y
Albany	N. Y.	113,344	Yes	Y	Y	Y	O	O
Buffalo	N. Y.	506,775	Yes	..	..	..	..	..
New York	N. Y.	6,000,000	Yes	Y	Y	Y	Y	Y
Niagara Falls	N. Y.	50,760	Yes	O	Y	O	O	Y
Rochester	N. Y.	295,750	Yes	Y	Y	Y	Y	O
Schenectady	N. Y.	88,723	Yes	O	No	O	Y	O
Utica	N. Y.	94,156	Yes	..	..	..	..	..
Akron	O.	208,435	Yes	O	Y	O	O	Y
Cincinnati	O.	401,247	Yes	Y	Y	Y	O	Y
Cleveland	O.	796,841	Yes	Y	Y	Y	O	Y
Columbus	O.	237,031	Yes	Y	Y	Y	O	Y
Dayton	O.	152,559	Yes	Y	Y	Y	O	O
Springfield	O.	60,840	Yes	Y	Y	O	O	Y
Toledo	O.	243,164	Yes	Y	Y	Y	O	Y
Youngstown	O.	132,358	Yes	No	Y	No	No	No
Portland	Ore.	258,288	Yes	No	Y	Y	No	Y
Erie	Pa.	93,372	No	..	..	..	..	..
Harrisburg	Pa.	75,917	No	..	..	..	..	..
Philadelphia	Pa.	1,823,779	Yes	Y	Y	Y	Y	Y
Pittsburg	Pa.	588,343	Yes	No	Y	Y	Y	Y
Scranton	Pa.	137,783	No	..	..	..	..	..
Providence	R. I.	237,595	No	..	..	..	..	..
Charleston	S. C.	67,957	No	..	..	..	..	..
Nashville	Tenn.	118,342	No	..	..	..	..	..
Dallas	Tex.	158,976	No	..	..	..	..	..
Port Worth	Tex.	106,482	Yes	Y	..	..	..	..
Houston	Tex.	138,276	No	..	..	..	..	..
Salt Lake City	Utah	118,110	Yes	Y	Y	Y	Y	Y
Norfolk	Va.	115,777	Yes	..	Y	..	Y	Y
Seattle	Wash.	315,312	Yes	Y	Y	Y	O	Y
Spokane	Wash.	104,437	Yes	Y	Y	O	O	Y
Tacoma	Wash.	96,965	Yes	Y	Y	O	O	Y
Wheeling	W. Va.	56,208	Yes	Y	Y	O	O	Y
Milwaukee	Wis.	457,147	Yes	..	..	..	..	..
Racine	Wis.	58,593	No	..	..	..	..	..

Y—Yes. O—No such rank.

Moving the Buildings Eases the Danger

Often some wit has made the remark that the building should be moved to prevent fire spreading to it from an adjacent building on fire. Firemen at Santa Fe Springs, Cal., did just that thing when an oil fire raged for several days. Homes in the fire zone were in immediate danger. The buildings were jacked up and moved to a more secure location. Although the task was difficult, the plan saved a number of homes that would otherwise have been destroyed.

Methods of Promotion Where Civil Service Is Not In Vogue

Methods of making promotions where civil service is not in vogue, vary. In Nashville, Tennessee, which has no civil service for promotion, examinations are required to get on the fire department. Physical and mental fitness is demanded, and promotions are also

(*Continued on page 971*)

Should Apparatus Leave Town?

Survey to Ascertain Conditions Resulting from Equipment Leaving for Department Parades and to Aid Neighboring Municipalities

WITH shrill staccato blasts of the siren, that were terrifying in their suddenness, the placid affairs of the little village were converted into exciting events. There was a fire. Some one's home was ablaze, and assistance was needed at once.

Thrill seekers, some members of the fire department, and others who wished to assist, rushed to the fire house. But those who came early had a crestfallen look. The highly polished apparatus, the pride of the village, was not there. In the excitement, the district forgot that it was participating in a firemen's parade, twenty-one miles away. Only an antique hose cart was left.

Before aid could be received from the nearest city, the dwelling on fire was beyond all hope of being saved. It was a total loss.

Such events are not rare. A condition, closely akin to the one described, occurs in many communities during the months when it is common to hold firemen's musters or tournaments. Any one who has ever had experience with a volunteer department consisting entirely of volunteers or call men, or one or two paid firemen, knows that the men are very keen for tournaments and parades—and conventions.

They train for weeks in advance in order to make a good showing at the gathering. The department tries to have as many men as possible in line for numerous prizes have been offered. There is one for the department having the most men in line, one for the company travelling the longest distance, one for the unit having the most apparatus in the line of march, one for the best appearing apparatus and so on.

Rivalry Prompts Large Turnout

Some one may have heard that the town of So and So will have seventy-five men in line, and it would therefore, not do for an enterprising community to permit So and So to outnumber them. And so an effort is made to have one hundred per cent attendance in the parade. All who can, arrange their affairs to permit them to leave with the apparatus. Every available piece, polished to the nth degree is transported to the muster. And the town is without immediate fire protection facilities for as much as twenty-four hours.

Insurance organizations are against this practice, for aside from the property owner, the underwriting companies have a direct loss from this practice. When insurance rates are established, they are computed on the basis that a certain department has a definite number of men and a stipulated amount of apparatus. When the efficiency of the department is impaired, the hazard is increased, and drastic steps are taken.

Not so very long ago, one company refused to pay insurance on a home on the grounds that there was no apparatus in town when the fire occurred.

A survey has been made to ascertain the attitude of rating associations on this problem. They are decidedly against the practice of taking apparatus outside of the city limits in communities having only one fire company. They are against having fire departments participate in parades because of the added dangers. Should a fire occur at that time, and even though it were possible for the apparatus to fall out of line, the roads are so jammed with parked automobiles, that immediate response is impossible. Some are even against holding firemen's musters or tournaments. The argument is advanced that the added efficiency of the firemen prompted by the glory of prizes, is more than offset by the danger placed on the community when a large number of firemen leave the district at one time. They are all against considering fire apparatus as a plaything or as a means for recreation.

Difficult to Make Fixed Rule

But the associations are in favor of having fire apparatus rush to the aid of a neighboring community when one company is left at home. Some admit that it is hard to establish a set rule and that they would even sanction one company departments leaving the village limits to aid a neighboring town. As an example:

Although there are several firemen's associations in Ohio and West Virginia, and meetings are well attended, no attempt is made to concentrate fire apparatus at the meeting place for holding fire department parades. The firemen attend the gatherings while some fire-fighters are left at home with the apparatus to safeguard the community.

Officials in these states believe that fire equipment should not be taken out of the territory for other than useful or worthwhile purposes. Musters are not termed worth while. Where a group of neighboring communities are found indulging in this practice, the inspection

bureau would make an adjustment in the credits allowed in establishing fire insurance rates, unless some other protection measures were provided at the time when apparatus was taken out of the village.

The inspection bureau in Nebraska opposes the plan of volunteer departments taking apparatus out of town to help neighboring villages, unless special apparatus is provided for that purpose. Another danger that they mention is the pounding that apparatus receives in going over the long, country roads. The normal life of the machines is thus reduced.

An interesting case occurred at Hastings, Neb., on December 1, 1927. Fire broke out at 10 a. m. and destroyed the power and light plant of the state hospital. The Hastings pumper had been called to help fight a fire in the business section at Holstein, Neb., twenty miles distant. Hastings, particularly in the section where the hospital was located, was almost unprotected. A call was sent to Grand Island, Neb., twenty-six miles away, for a pumper. This is just one example of what may happen when apparatus is taken out of town.

Mutual Aid Given in Illinois

Illinois considers it bad practice to strip a town of all fire fighting equipment in order to answer an alarm from another city. In one area of this state there is a very strong organization formed to give mutual aid when necessary. Some of the cities in this association do not have more than one piece of apparatus. The results of this plan show that much good work is accomplished, and so far, no bad fires have broken out in the communities which were left temporarily without fire protection. This, it has been reasoned, is a question of luck. Although there are two forceful arguments to this practice, pro and con, the bureau does not recommend the plan. It is difficult to criticize a city for helping another where they have materially helped to reduce the fire loss of the alarm they were called to answer.

In Oklahoma conditions such as described have been discontinued with the passing of the horse-drawn fire apparatus. Even the chiefs, meeting in state associations, have expressed their disapproval of the practice, and of course, the rating organization is firmly against it. Outside aid is favored only where equipment will remain in reserve for the protection of the community from which aid is requested.

Officials in Louisiana have not been aware of a town stripping their department of apparatus for parades in neighboring sections, unless there were two or three pieces of apparatus. In such cases, there were generally two paid men to take care of the emergency.

The interest in fire department matters, especially in southern Louisiana towns, is such that those concerned would never permit apparatus to leave the town for parades. They know the dangers of hampering the department.

In Louisiana, there is the Police Jury, that is worthy of mention. It is the governing body of each Parish, or town board in the state and it cooperates with the fire department in purchasing apparatus. This apparatus is maintained by the local fire department, and manned by a percentage of its men. The equipment responds to

(*Continued on page 976*)

Assistant Chief Samuel H. Dodd, of Los Angeles, Demonstrating the Principle of Ventilation to a Class of the Fire College in That City, Using a Miniature Steel Building and a Smoke Bomb

The Los Angeles Fire College Gives Full Year's Course to Officers

Its Fourth Consecutive Year of Operation—Is Fully Equipped With All Kinds of Tools and Appliances—Courses Are Comprehensive

By ASSISTANT CHIEF SAMUEL H. DODD, in Charge of the Los Angeles, Cal., Fire College

THE training of the officers and members of fire departments by means of fire colleges and schools is becoming more and more general throughout the country. The following article describes one of the most efficient and up-to-the-minute institutions of its size in the country.

This is the fourth consecutive year of operation of the Los Angeles Fire College, an institution conceived by Chief R. J. Scott for the more efficient training of his men in the science and art of fire fighting.

The college was opened January 3, 1925, under the immediate charge of the writer, assisted from the beginning by Capt. W. W. Tebbetts, later by Capt. Joseph L. Gowell. Each year instruction has been devoted to the improvement of those holding particular ranks in the department. For instance, the first year was devoted to captains and lieutenants, on the principle that a department could be no better than its officers. The second year was devoted to engineers and drivers, with particular reference to their problems; and the third year, to the instruction of those holding the rank of fireman, these comprising in number a total of 937. With such a great class it is impossible to instruct any great proportion at any one time, hence classes are divided into divisions of about forty men each, who are required to attend on their own time, and in practice it requires one day every two weeks. Many study-bulletins are issued, and a man must make keen application and do a great deal of studying to make a passing grade in the courses prescribed. The excellence of the courses has attracted the attention of fire departments all over the country, and even across the ocean.

College Fully Equipped

The college is equipped with all kinds of tools and appliances used in fire-fighting, such as fire hydrants, tanks, sprinkler systems, fire extinguishers, and the like. A complete sprinkler system, a refrigerating plant, fire alarm systems, fire escapes, fire doors and shutters, are also used.

Such an exhibit is a great asset to the college, as it gives the men both the practical and theoretical sides of instruction. Whenever possible, motion pictures are shown on all subjects discussed. As Los Angeles is the film industry center of the world, the college receives much help from the film companies, who are always ready to make pictures for instruction or other purposes.

The class room is equipped with desks for 80 men, while the lecture room will accommodate approximately 500. All members attend the college while off duty, the attendance of the officers being one day every other week. The officers' course is about eight months in length.

Course is Comprehensive

Some of the subjects taught are:

Apparatus and Equipment; Arson; Brush Fires; Building Inspection; Care of Quarters; Causes of Fire; Dust Explosions; Electrical Hazards; Exposures; Fire

Department Hydraulics; Fire Alarm Systems, Public and Private; First Aid; Fire Hazards, What They Are and How to Remedy Them; Foam Systems; Fires in Cellars; Fires in Theatres; Fires in Factories; Fires in Hotels, Apartments and Dwellings; Fires in Motion Picture Studios; Fires in Ships and Docks; Fires in Warehouses, and other Kinds of Fires; Making Proper Reports; Overhauling; Proper Use of Firestreams; Refrigerating Systems; Reservoirs, Mains and Hydrants; Salvage; Use of Fire Equipment; Use of High Explosives, with Practical Demonstration of Same; Ventilation; Storage of Oil; Water Supply.

Chief Dodd Uses Fire Hydrants to Demonstrate a Typical Hydraulic Problem Before a Class of the Los Angeles Fire College

Outside Experts Also Lecture

Outside experts also lecture on technical subjects, such as "Chemistry of Fire," "Action of Fire on Chemicals," "Installation of Foam Systems," etc. The officers also visit various industrial plants to get first-hand information.

The lectures are made up into lessons which are given to members, who must pass a written examination on each subject as well as a final test. The Civil Service Commission is given a copy of each lesson so that they have a larger number of subjects from which to draw, and use in any examination they may desire, generally covering local conditions and work.

Officers Trained First

The officers receive instruction first because a fire department is what its officers make it. When the officers have finished their course, the engineers and auto firemen are given a course in hydraulics, proper care and operation of motor apparatus, together with the practical handling of same. Captain J. L. Gowell, who is considered an expert in the theory and practice of automotive engineering, is the instructor. He is assisted by the fire department master mechanic and chief electrician. Models of motors, batteries, generators, and different parts of motor fire apparatus are used.

At present all members of the department below the ranking of captain (there are no lieutenants in the department) are attending a modified officers' course at the college, a total of over 1,400 men receiving this instruction. When a man is graduated from the college he receives a hand-engraved certificate which he has had to work hard for, and he goes out with a better knowledge of his job.

An Outline of the Course

The following is an outline of the courses of the Los Angeles Fire College for the years 1927 and 1928, up to the end of September of this year:

1927

January 3 to 28, inclusive—Chief McDowell addressed class during Chief Scott's absence on the subject of "Results Expected From Men." Capt. Tebbetts addressed class on "Policy of the School." Capt. Gowell lectured to class on "Administration." Intermission. Chief Dodd gave an illustrated lecture on "Various Ways of Receiving and Transmitting Fire Alarms," illustrated with 51 slides. All members were given copy of Study Bulletin No. 1.

January 31 to February 25—Explanation by Capt. Tebbetts of different forms of examinations given in school. Examination on Lesson One. Lecture by Chief Dodd on Care of Hose, illustrated with 23 slides. Members given copy of Lesson Two.

February 28 to March 28—Explanation by Capt. Tebbetts of different forms of examinations. Examination on Lesson Two. Lecture by Chief Dodd on Fire Escapes, Interior and Exterior Standpipes and Sprinkler Systems, illustrated with 61 slides. Demonstration by Chief Dodd of Grinnell Sprinkler System in operation. Class given copy of Lesson Three.

March 28 to April 25—Class given 15 minutes to write a description of some subject taken up in a former lesson, a different question being given to each class. For example: Describe the installation and operation of an automatic sprinkler system. Answers of ten men were read in class, as their names were called at random, the class benefiting by the different viewpoints expressed. Written examination on Lesson Three. Lecture by Capt. Gowell on First Principles of Arithmetic. Lecture by Chief Dodd on different types of fire extinguishers, their uses and limitations, illustrated by such types of extinguishers as soda and acid, tetrachloride and foamite. Demonstration of foamite with 12-gal. suspended type of foamite tank. Showing of three motion picture reels on the proper use of various types of extinguishers. Class given Lesson Four.

April 25 to May 23—Capt. Tebbetts gives examination and instruction in spelling, with men correcting their own papers. Examination on Lesson Four. Lecture by Capt. Gowell on Subtraction. Lecture by Chief Dodd on Brush and Grass Fires, illustrated by 72 slides. Class given copy of Lesson Five.

May 23 to June 20—Examination on Lesson Five. Lecture by Capt. Gowell on Arithmetic: Multiplication. Illustrated lecture by Chief Enos on "Arson," with 27 slides. Class given copy of Lesson Six.

June 20 to July 18—Class adjourned to kitchen, where a replica of an arson plant was installed. After viewing it for ten minutes class returned to classroom and was given a written examination covering what was seen in arson plant; 15 questions. Written examination on Lesson Six. Lecture by Capt. Gowell on Arithmetic. Subject: Division. Lecture by Mr. W. Kennedy, Chief Inspector, City Electrician, illustrated by 47 slides. Class given copy of Lesson Seven.

July 18 to July 29; Sept. 12 to 26—Written examination on Lesson Seven. Lecture by Capt. Gowell on Arithmetic: Addition of Decimals. Lecture by Chief Dodd on Building Inspection, illustrated by 77 slides. Class given copy of Lesson Eight.

Captain Joseph L. Gowell, Assistant Instructor, Demonstrating the Proper Angle for a Fire Stream Before a Class of the Los Angeles Fire College, Using a Miniature Building and a Small Stream of Water

Sept. 26 to October 24—Written examination on Lesson Eight. Lecture by Capt. Gowell on Subtraction of Decimals. Lecture by Chief Dodd on Exposures, illustrated by 84 slides. Showing of three-reel Underwriters' Picture, "Fire and Safety Appliance Testing at Underwriters' Laboratories."

Oct. 24 to Nov. 21—Written examination on Lesson Nine. Lecture by Capt. Gowell on Multiplication of Decimals. Lecture

(*Continued on page* 988)

What Should Modern Fire Department Rules and Regulations Include?

Wide Diversity at Present in Rules of Different Departments—First of a Series of Articles on This Subject

IN AN effort to determine what subjects should be covered in a set of rules and regulations for modern fire department application, this journal has undertaken a compilation of rules and regulations as enforced in cities throughout the country. In this issue appears the first of this material, relating particularly to the duties and authority of the chief of department. In subsequent issues will appear data on rules and regulations as applied to other ranks, as well as the general rules and regulations for observance by all members of the department.

As a foundation of this work, the rules and regulations of forty-one American fire departments have been analyzed. The departments included in this analysis are: Montgomery, Ala.; Fresno, Cal.; Oakland, Cal., San Francisco, Cal.; Denver, Colo.; New Haven, Conn.; Waterbury, Conn.; Washington, D. C.; Atlanta, Ga.; Augusta, Ga.; Peoria, Ill.; Springfield, Ill.; Sioux City, Iowa; New Orleans, La.; Portland, Me.; Baltimore, Md.; Cambridge, Mass.; Pittsfield, Mass.; Worcester, Mass.; Detroit, Mich.; Minneapolis, Minn.; Kansas City, Mo.; St. Louis, Mo.; East Orange, N. J.; Elizabeth, N. J.; Newark, N. J.; Rochester, N. Y.; Syracuse, N. Y.; Utica, N. Y.; Yonkers, N. Y.; Oklahoma City, Okla.; Akron, O.; Toledo, O.; Erie, Pa.; Philadelphia, Pa.; Pittsburgh, Pa.; Scranton, Pa.; Providence, R. I.; Charleston, S. C.; Dallas, Tex.; Milwaukee, Wis.

New York was omitted from the list in view of the fact that the complete set of rules of the New York Fire Department have already been published in this journal, and are available for our readers to make comparison with the data presented herewith.

Of particular interest is the fact that some of the rules submitted are based upon the original rules and regulations enforced when the departments first went on a paid basis. Hence some of them seem slightly obsolete.

Number of New Rules Compiled

Quite a number of the rules submitted were new compilations, having been printed during the past year. Hence in this survey and compilation the subject may be treated from all angles and sufficient data presented to indicate what the ideal rules and regulations for the modern American fire department should include.

No attempt will be made in surveying these rules to place them in chronological order. Instead, those rules which have the most general application will be treated first, and those which have special application in individual cities, will be considered later.

In twenty-seven out of the forty-one departments considered, the following two rules are incorporated, although the wording in different cities may be somewhat varied:

> The chief shall have absolute command, control, charge, management, discipline and supervision of every officer and employee in the fire department.
>
> The chief shall have sole control, management and command at fires over all officers, members and employees of the department, and over all stations, apparatus and appurtenances belonging to the same.

In twenty-six of the forty-one departments the following rule is enforced:

> The chief shall see that all rules and regulations and orders of the department are strictly enforced, and that proper discipline is obtained and maintained by all officers and men.

Twenty-five of the departments consider the following rule as essential:

> The chief shall act as the executive officer, and his orders, in all matters pertaining to the maintenance and conduct of the department, shall be absolute and final, subject, however, to review by the Board of Fire Commissioners (the mayor, the commissioner of public safety, the city manager, etc.)

In some departments the acts of the chief are subject to review by fire commissioners, while in other cases the mayor, the city manager, or the commissioner of public safety is the one who reviews the actions of the chief.

Authority of the Chief

The authority of the chief in suspending members of the department is incorporated in the following rule, which twenty-two out of the forty-one departments observe:

> The chief shall (have power to) summarily suspend any member of the department from duty for flagrant violation of the rules and regulations where the reputation and discipline of the department would suffer if such action were not taken.

Some departments specify that the chief "has power to" suspend members while others direct him to suspend them.

Most cities require that the chief forward to the Board of Fire Commissioners, the Fire Commissioner, the Superintendent of Safety, the Mayor, the City Manager or other official, report of his action in the above.

Less than one half of the departments, seventeen to be exact, direct the chief to make details and transfers, as instructed by the following rule:

> The chief shall detail and assign officers and men to the several companies and transfer members where justified by the needs of these departments.

Out of the forty-one cities only sixteen require that:

> "The chief shall report to the Board of Fire Commissioners (Fire Commissioner, Supt. of Public Safety, Mayor, City Manager, etc.) any violation of the rules and regulations or disobedience of orders by officers or men under his command."

Of this number, approximately one-half require that charges be filed by the chief against the offender at the time the report is made to the board of commissioners, or other officials.

Fifteen departments require that "the chief shall direct the work of saving lives and property," and thirteen permit him to grant temporary leaves of absence.

Only eleven of the forty-one cities require that "the chief keep an accurate record of all business transacted in the fire department."

Nine cities have incorporated in their rules and regulations the following four rules:

> The chief shall at all times supervise and keep in repair and ready for instant use all the property of the city connected with the fire department.

The chief shall have power in case of fire to demolish buildings or parts of buildings, or other structures which in his judgment might cause further damage to life or property.

The chief shall devote his entire time to the discharge of the duties of his office.

He shall report to the Commissioner of Public Safety (fire commissioner, mayor, city manager, etc.) any officer or member, who, by reason of age, disease, accident or other incompetency, does not, or cannot fully and properly perform the duties required of him.

With regard to the second rule noted above, several of the cities specify that the chief shall have power to remove any obstacle which interferes with the operation of the department in fighting a fire. Hence, it is not only a question of saving life, or saving property, but of expediting the department, that is considered in these cases.

Eight cities have embodied the two following rules in their rules and regulations:

The chief may prescribe and establish from time to time such rules and regulations as he may deem advisable. (In some instances his action is subject to the approval of the Board of Fire Commissioners, or other superior authority, before they are put into effect. In other cases, the chief has final say as to the rules and regulations.)

The chief shall transmit to the Board of Fire Commissioners (city manager, superintendent of safety, mayor, director of department of public safety, etc.) through its secretary, all reports and communications officially made to him."

In six cities the chief is required to "make special reports upon any matters which in his judgment require the attention of the fire commissioner (supt. of public safety, board of fire commissioners, city council, mayor, city manager, etc.).

Five of the 41 cities have the following two rules:

The chief shall inquire into the origin of all fires, keep a record of alarms and fires, together with loss and insurance as fully as can be ascertained.

He shall cause to be extinguished all fires with the least possible danger to life and property, and prevent unnecessary damage at fires, from fire, water, etc.

The following three rules are in force in only four cities of the group:

In case a fire occurs in the towns or villages within reasonable distance of the city limit, when aid is requested, the chief, in his discretion, may send such aid, but in no case shall more than two companies leave the city at one time, unless on order from the Commissioner of Public Safety (fire commissioner, board of fire commissioners, mayor, city manager, etc.)

The chief shall see that companies conduct regular drills.

He shall recommend to the city council from time to time the selection of new sites, changes in the location of stations and companies; the building of new stations; purchase of new apparatus, hose, equipment, etc., rebuilding, breaking up, or sale if necessary of old hose, equipment, etc.

And each of the following five rules are in effect in three cities only:

The chief shall requisition and account for all supplies.

He shall test and approve or disapprove, with the reasons therefor, when practicable, all apparatus, hose, equipment or tools before purchase of acceptance of same.

He shall assign chiefs of battalions to their respective battalion and designate their fire districts, also the fire district of the assistant chief.

He shall prepare and submit an estimate of the cost of maintaining the fire department during the next fiscal year with items in detail; including recommendations.

He shall have power, in case of violation of rules and regulations, which violations have been proven, to demote or dismiss the offender from the department. (Two of the cities reported that in case of demotions or dismissals, the chief must report such at once to the Board of Fire Commissioners.)

Further Duties of the Chief

Each of the following nine rules have places in the rules and regulations of two out of the 41 cities:

The chief shall diligently inquire into any and all complaints of misconduct made by citizens against firemen while on duty, and for neglect of duty or violation of the rules and regulations of the department.

He shall direct the work of saving lives and property.

He shall assign members and apparatus to fire duty.

He shall provide for and properly supervise inspections of all buildings, premises, and public places, except the interior of private dwellings.

He shall report annually to the city council the condition and needs of the department, the number of men therein and their names, the number and names of all members who have been discharged during the year, and all statistics and information regarding the fires in the city during the year, the losses by fire, the causes of fire, and its prevention or extinguishment, and such other information and make such recommendations as he may deem wise.

He shall condemn all unserviceable property and report the same to the commissioner of public safety (or the fire commissioner).

He shall have, during the progress of a fire, the direction of the police force present, for the purpose of preserving property and the enforcement of order.

He shall examine into the condition of the apparatus, buildings and other property belonging to the department as often as he shall deem it expedient, and make a statement thereof to the Director of Public Safety (or fire commissioner). He shall make an inventory of all property of the department in December of each year (or October of each year).

The following rules are in force in but one city of the 41, unless otherwise noted:

Cambridge, Mass.: The chief shall take cognizance of any or all neglect of duty or violation of any rule by any of said officers and by any employees thereof.

Portland, Maine: The chief shall certify all bills against the city chargeable to said department.

The chief shall decide summarily all disputes or questions arising out of matters connected with said department among the officers and men.

East Orange, N. J.: The chief shall attend all fires.

He shall record all fire accidents.

He shall see that city ordinances relating to fire prevention are observed.

The chief shall fill vacancies temporarily, reporting same to Board of Fire Commissioners.

Minneapolis, Minn.: The chief shall determine all cases of violation of any rule, regulation or order of the department, or other breach of discipline, and shall have power to punish the offending party by reprimand, reduction in rank, suspension without pay for a period not to exceed ninety (90) days or suspend with recommendations for discharge, subject to the rules of the Civil Service Commission.

Denver, Colo.: The chief shall see that fire prevention laws are properly enforced.

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The Kenlon-Archer Party Are Back from Italy

Chief and Mrs. John Kenlon, and Dr. and Mrs. Harry Archer of the New York Fire Department, have returned from Italy where they attended the International Firemen's Convention at Turin. They also inspected fire departments in a number of the larger European cities. The photograph shows them leaving the boat in New York City, and evidently glad to be home again.

The Firemen Are Not Always to Blame!

Small Blazes Often Develop Into Conflagrations Because Firemen Are Hindered in Proper Performance of Their Normal Duty

By HENRY W. PILCH, Madison, N. J.

Drawings by "Art" Espey

"WELL, the foundation has been saved," some village know-it-all will remark after the fire department ends a losing fight.

But few of the sidewalk fire-fighters pause to realize that knowingly or unknowingly, obstacles have arisen that would nullify the efficiency of the best trained department. Modern pumpers maintained in the best of mechanical condition, outfitted with the best grade of fire hose and manned by men thoroughly trained in their duties, are of no value if water is not provided for just such emergencies.

A number of incidents have occurred that bear out this fact, and heads of departments can tell of others.

Firemen from Millburn Center, N. J., made a five-mile run in response to an alarm. When they arrived, the men found that the nearest hydrant was about a quarter mile away. Two lines of hose were laid. This fire was the longest run ever made by the department and it necessitated the longest hose line they ever laid.

At another place, fire broke out in the residence on a dairy farm. As is common in such instances, no city protection was provided. Water was pumped from a well on the farm, but that soon went dry, and the men were forced to stand by with limp hose and watch the building burn to the foundation.

Often Lack of Water

Some time ago, the Long Beach, N. J., department made a run in the fact of a high wind. It was necessary to stretch 1,500 feet of hose through sand dunes to get water.

Several years ago, the chief of Kearny, N. J., brought to the attention of the town council the poor fire protection facilities. There were no fire hydrants on Kearny avenue, the main business thoroughfare. It was stated that the New Jersey Suburban Water Company that owned the main on this street, refused to permit the main to be tapped for fire hydrants.

Sometimes there is a handicap from using too many lines. In this same town, firemen had so many lines that the water system could not supply them. Five railroad locomotives and five pumpers directed streams on the burning buildings. This drained the water main of the Bayonne Water Company.

A faulty fire alarm system was the direct cause of two children's death in Lyndhurst, N. J. The alarm system had been troublesome for months.

When the fire occurred, there was a forty-five-minute delay in notifying by individual calls from police headquarters. By the time the fire department assembled, the house was a roaring furnace. A ladder was placed up to the second floor in an attempt to save the children, but the top of the ladder was burnt and it was impossible to enter.

The town had suffered from a similar experience many months before. A box was pulled, but the mechanism was faulty. The firemen responded forty minutes later. Firemen protested to the officials about the faulty fire alarm system, but nothing was ever done.

Another Great Handicap

Excepts from a newspaper account tell very vividly of the odds that are stacked up against the firemen:

"People flocked to the porches of the houses across from the burning structure and milled in the streets. It was necessary time and again for policemen to push back the eager throngs from a swiftly passing fire truck or to shout warnings to those who were too close for safety. Traffic was obstructed for hours.

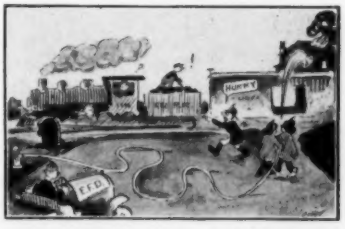
"One Newark pumping engine having trouble in connecting with a hydrant, had to go to another three blocks away.

"Bad traffic conditions also impeded early progress. As the fire engines arrived, residents in the vicinity of the school endeavored to direct traffic. Motorists attracted by the fire were constantly arriving, and hundreds of autos lined the streets nearby. In many instances because of the lines of hose laid across the street, fire apparatus from adjacent municipalities had to detour widely."

Improper location of fire houses is another source of trouble. In one community, certain sections of the town are five miles from fire headquarters and but one-half mile from fire houses located in adjacent municipalities.

Train Delays Apparatus

Railroads frequently hold up fire apparatus, especially so if the tracks are located so that one-half of the town is on either side of the railroad.



A two-story frame house was destroyed in Elizabeth, N. J., because fire apparatus was held up by a freight train, and because the firemen could not get sufficient pressure. Chief August Gerstung had his chauffeur time the delay, which amounted to eight minutes. During this period the chief mounted the crossing tower and saw the entire rear part of the house blazing. Several companies were held up.

Once lines were laid over the track, the firemen discovered that they were hampered by poor water pressure. A call was sent into the water company, and when water did commence to flow rapidly, it was too late.

A lightning bolt struck a home near Butler, N. J. Companies in Butler and Pompton were called, but they were unable to bring the apparatus close to the burning building because the roads leading to the place, which is located on a hill, were still blocked with snow.

The following is taken from a newspaper account:

"Lightning during the storm struck an oil tank at the

Bayway plant of the Standard Oil Company, Elizabeth, causing a spectacular fire and work for firemen who limited the blaze to that one tank in which were only two feet of slop oil. A booster pumping station recently put into commission for fire-fighting purposes did not function and water was drawn from a nearby salt creek."

Not every one blames the fire department for being unable to save a building. There was loss of life in a fire in East Orange, N. J. According to the fire commission report, the catastrophe was attributed to delay in putting in an alarm.

There are many accounts where fire apparatus on the way to answer some alarm collided with some motorist who believed that he was entitled to as much of the highway as the fire department. Many a company has been delayed in arriving at a fire by a fleet of motorists, with light, high-speed cars, who attempt to race to the fire and thus block the progress of the fire apparatus.

The instances covered are but a few of the many accounts that appear daily in newspapers relating of some obstacle that was placed in the path of the fire department to prevent them from performing up to their maximum efficiency.

The casual watcher at a fire, and the public in general, are prone to blame fire officers and the men for any large loss from fire without stopping to analyze the underlying cause for so large a loss.

It is up to the fire chief to prevent his department from being considered as a public football. Whenever he is accused of inefficiency, and the real cause for the complaint is not due to any fault of his, it is up to him to acquaint the residents with the real cause. If it is due to faulty fire alarm lines, poor water pressure, or any of the many causes possible, the chief should tell the newspapers just who is to blame and also the possible remedy. Otherwise, the chief may find himself in very embarrassing situations, and when it comes time to vote on increases in firemen's salaries or funds for improvements, he may find that the public is working against the department.

There are many handicaps in fire-fighting that the lay public can not appreciate.

Convicts Fire Prison for Revenge

Prisoners in the tubercular section on the Wynne State Prison Farm attempted to dig a tunnel to be used as a means for escape. They were discovered. As an act of revenge, they stuffed newspapers into the walls of the building and set fire to the paper. Flames destroyed that building as well as four other structures.

No one was injured. The prisoners were herded together by guards as soon as the fire was discovered.

Seven previous attempts had been made during the past year to fire the tubercular prisoners' building, but this is the first time that the efforts have been successful.

New Fire Signal for Ventnor City, N. J.—A new fire signal is being considered for Ventnor City, N. J.

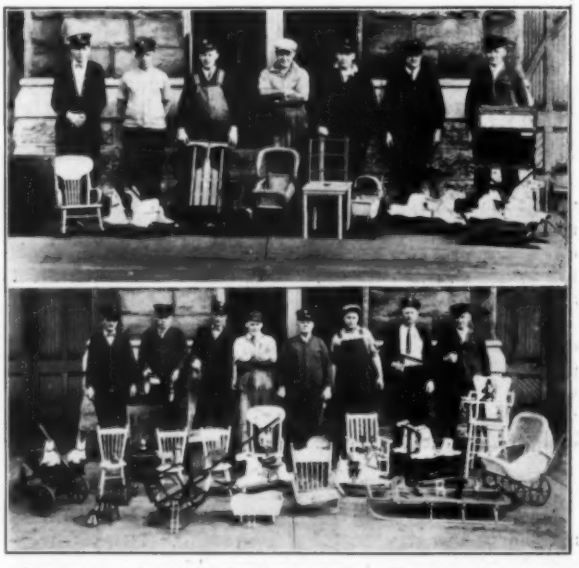
FIREMEN RECLAIM OLD TOYS TO BE GIVEN TO NEEDY CHILDREN

How Chief of Richmond, Ind., Fire Department Saw Chance to Help Poor Kiddies Enjoy Christmas—Firemen Restore Old Toys

By ERNEST A. DENCH, Hohokus, N. J.

THE following account of the activities of the Richmond, Ind., firemen in restoring old toys donated by citizens for the children of the poor, was related to the author by Leo J. Staverman, Richmond, Ind., Branch Manager of the R. F. Johnston Paint Company, which donated all of the paint to make the playthings as good as new:

"Last Christmas Chief E. E. Miller, of the Richmond, Ind., Fire Department, saw the opportunity to do more for the needy children than had been done up to that time. The morale of his force is excellent, so all the fire fighters were keen to repair and repaint discarded toys as a form of recreation during the year. It needed a little outside cooperation to start things moving. *The Palladium*, afternoon newspaper, helped matters along by raising $54.50 necessary to equip a workshop in the fire station basement. But this money was a drop in the bucket compared with



Two Groups of Richmond, Ind., Firemen, with the Old Toys Which They Have Restored During Their Leisure Time, and Which Are to be Given to Poor Kiddies at Christmas

the equipment donated by those local firms approached for contributions.

"A small lathe for turning wood and iron, a soldering outfit and a large work bench were donated in this manner. We saw the opportunity to help the boys, so we offered to contribute all the paint needed in the reclamation work. We supplied a small spray for part of the painting, in addition to the stencils for placing designs to break large solid blocks. We also mixed the paint in the desired shades.

"Actual work began January first, and by the 20th of the same month sufficient toys had been repaired to exhibit them in our show window. They were substantial toys, almost as good as new. This was our cue to arouse community interest in the campaign, so we hand-lettered a large showcard like a facsimile letter, and drafted the following appeal:

"'Richmond, Indiana, January 17.

"'Hullo, Folks:

"'We just want to show you how far a little time spent in repairing and painting will go towards restoring discarded toys to their original condition.

"'Let us never forget that wonderful slogan of our Beauty City, "The Panic Proof City." We just want to take another step farther, by making this wonderful town of ours free from heartaches next Christmas morning, for the poor and unfortunate kiddies.

"'We do not wish to bring any pressure on your pocketbooks,

(*Continued on page* 940)

History and Evolution of Fire Fighting

Fire Engines Used in Earliest Antiquity—Fire as Weapon in Wars—Some Ancient Types of Engines—Leather Hose Invented

By FRED SHEPPERD, Managing Editor of FIRE ENGINEERING*

I WILL try and cover the essential points in the chronological order—from the earliest records of fire fighting up to the present date—i. e., to the advent of the motor driven fire truck.

At this time let me say that I am not going to decide which piece of motor fire apparatus was the first one put in service. From reports which have reached me from time to time I am fully convinced that there are at least 18 fire trucks each of which deserves the honor of being called the first motorized machine in the American fire service.

But I am starting at the wrong end of the story.

Ancient history shows that water, the most effective agent for extinguishing general fires, has always been employed, and contrivances for applying it with effect have, in every civilized country, been assidiously sought for. In the absence of more suitable implements, buckets and other portable vessels of capacity, at hand, have always been seized to convey and throw water on fire; and when used efficiently at the commencement of one have often been sufficient; but when a conflagration extends beyond their reach the fate of the burning building often resembles that of the ship of Eneas (of early historical time):

"Nor bucket poured, nor strength of human hand
Can the victorious element withstand."

Probable That Fire Engines Were Used in Early Times

The necessity for some device by which a stream of water might be thrown from a distance on a flame must have been early perceived, and if we are to judge from the frequency and extent of ancient conflagrations, the prodigious amount of property destroyed, and the human misery produced by such, we could conclude that ingenious men of former times were stimulated in an unusual degree to invent a machine for this purpose. That this was the case cannot be questioned, although no account of their labors has been recorded in form such as to reach our times. It seems exceedingly probable that some kind of fire engines were used in the celebrated cities of remote antiquity—in Nineveh, Tyre, Babylon, and others.

Fire as a Weapon in Early Wars

There are other reasons for believing that pumps or syringes for squirting water on fires were in use previous to the time they are first mentioned in history. Fire was one of the most common and destructive agents in ancient wars. When a city was beseiged or assaulted, it was the first object with the assailants to protect the moving tower in which their battering engines approach the walls, from being consumed by fire, oil, and pitch thrown upon it from the ramparts.

We know that men were specially trained to fire buildings, and that they were expert in their profession, especially in shooting lighted arrows and darts into and upon structures that could not be approached; hence the necessity of device for throwing water upon these missiles, and the places inflamed by them. Such a system of warfare never could have been carried to the extent it was, and for so many ages too, among the celebrated nations of old, without force pumps or something like them being used to throw water on such parts as could not be reached by it when thrown from hand.

Ox Entrails Used as Hose

That machines of the pump type were used on these occasions is evident from the contrivance of Apollodorus (440 B. C.), mentioned in the remains of a work of his on "war machines." One of his plans for extinguishing fire in the upper parts of a building was by means of the entrails of an ox, these natural tubes being connected to a bag filled with water. By compressing the bag the liquid was forced through them to its place of destination.

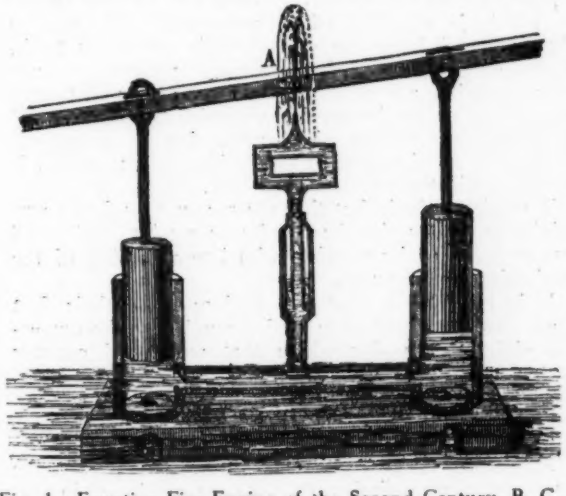


Fig. 1—Egyptian Fire Engine of the Second Century, B. C., from Heron's Spiritalia

Not knowing much about ox entrails, I would hesitate to suggest what nozzle pressure they might have been able to get with such a layout. At least this much might be said of Apollodorus's arrangement—it is the first pumper and hose layout on record.

But here is why we know pumps were used in his time. "This device," Apollodorus says, "may be adopted when the machine called a *sipho* is not at hand." Now if we had not known that the term *sipho* was anciently used to designate syringe (hand pumps) and other tubular instruments, the substitute which Apollodorus here proposes sufficiently proves that it was a force pump to which he refers, and one too that, like later fire engines, was furnished with hose through which the water was conveyed to "elevated places" he mentions.

Among the small number of ancient writings that escaped the destruction in those dark and turbulent ages that intervened between the decline of the Roman power and the introduction of printing into Europe, is a Greek

* From a paper read before the annual convention of the Pacific Coast Association of Fire Chiefs at Sacramento, Cal., Oct. 1-6, 1928.

manuscript, containing an account of various devices for the application of water, and among them an engine for extinguishing fires. This engine was the Spiritalia Heron (Heron lived around 200 B. C.). As this engine may interest some of our present day fire fighters, an illustration of it is shown in Fig. 1.

Heron's Fire Engine

To persons not familiar with hydraulic machinery this figure will prove a rude and imperfect affair; but notwithstanding its antiquity and the mutilations which it has unquestionably sustained in passing through the hands of various copyists, it exhibits nearly all the essential elements of the hand engine as used in this country up to the Civil War time 2,000 years later. Heron's engine consists of two brass force pumps connected to one discharge pipe. The cylinders are secured to a base of wood and are partly immersed in water; they are described in the text as turned or bored very smooth, with pistons accurately fitted to work in them. The piston rods are attached by bolts to a double lever at equal distances from the center or fulcom at A. The rectangular figure into which the upper part of the discharging pipe is formed has certainly been added or altered by some transcriber of the manuscript.

There is conclusive evidence that the figure has been altered; for example, there is no provision represented by which the direction of the perpendicular jet can be changed, and hence an engine made according to it, would, on this account alone, be useless; now Heron not only describes a movable tube, fitted by a joint to a perpendicular one, by turning of which the water could be discharged on any given place, but he refers his readers to the figure of it in the illustration—which is not shown in the reproduced picture.

There is no doubt but that the rectangular figure was originally an air chamber, and was gradually changed into rectangular by copyists who knew nothing of the mechanics of the pump.

It is remarkable, that fire engines made their first appearance in Egypt, thus adding another to the numerous obligations under which that wonderful country has placed civilized nations in all times to come. (Heron's engine was an Egyptian development.)

Rome's Fire Service Before Her Decline

And now, after noting that the earliest fire engine known was very similar to the ones employed in this country up to the Civil War time, and further that the said first engine known was in service at least 200 years B. C., we will step over a large number of pages of history and consider the fire service of Rome just before her decline.

Although the police and other arrangements for the actual suppression of fires in ancient Rome are not well ascertained, some interesting particulars are known. A body of firemen, named Matricularii, was established, whose duty it was too extinguish the flames. Similar companies were also organized in provincial cities. This appears from Trajan's reply to Pliny respecting the formation of one in Nicomedia, and from which we learn that these ancient firemen frequently created disturbances by their dissension and humor. Incidentally it will be well to remember this point for we will see how little changed firemen were over a period of 1800 years—as I will note later.

Correspondence Between Pliny the Younger and the Emperor Trajan

Pliny (the younger) was governor of one of the Roman provinces; after giving the emperor an account of a fire in Nicomedia, a town in his province, he continues:

"You will consider, sir, whether it may not be advisable to form a company of firemen, consisting of only 150 members. I will take care none of those of *that business* shall be admitted into it; and that the privileges granted them shall not be extended to any other service. As this corporate body will be restricted to so small a number of members, it will be easy to keep them under proper regulations."

In answer, the emperor sent the following letter:

Trajan to Pliny—"You are of opinion it would be proper to establish a company of firemen in Nicomedia, agreeable to what has been practiced in several other cities. But it is to be remembered that societies of this sort have greatly disturbed the peace of the province in general, and of those cities in particular. Whatever name we give them, and for whatever purpose they may be instituted, they will not fail to form themselves into factious assemblies, however short their meetings may be. It will therefore be safer to provide such machines as are of service in extinguishing fires, enjoining the owners of the houses to assist in preventing the mischief from spreading, and, if it should be necessary, to call in the aid of the populace."

From an expression in the letter of Pliny just quoted, we learn that men were regularly brought up to the art of extinguishing fires, the same as to any other profession: Of the company that he proposed to establish, he remarks, "I will take care that none of those of *that business* shall be admitted into it."

(*Continued on page* 965)

Council Praises Coolidge for Interest

President Calvin Coolidge was praised for his friendly interest in promoting fire prevention activities, in a resolution that was adopted at the regular fall meeting of the National Fire Waste Council held in Washington, D. C.

A wider program of fire prevention activities for the coming year has been worked out by the Council. The program provides for continuing and extending the Inter-Chamber Fire Waste Contest in which more than six hundred cities are participating. The Council will also distribute education material, develop a fire prevention service for industry, extend the rural fire prevention program and work towards establishing fire fighting courses for firemen in leading education institutions.

At the present the short annual courses for firemen, are only being held in a few western state universities.

Members of the National Fire Waste Council at Washington

Fifty members of the fire waste council called on President Coolidge to thank him for his sympathetic understanding of their work. On the left of the President is Wallace Rogers, Chicago, Ill., national chairman of the council, on the right T. Alfred Fleming and to the right of him, second row, is George W. Booth, chief engineer, National Board of Fire Underwriters.

Vigilance Might Have Saved One Plant

Fire in Machine Shop Shaft Should Have Been Detected Before It Gained Proportions—Suggested Method of Handling Fire

THE fire described in the last issue of this journal, in the series on administration, was fairly well handled, with one exception—failure to detect spread of fire in machine shop to the south of the main building.

As described in the article in the last issue, the city in which this fire occurred is located in the eastern section of the country, and has a population of around 65,000.

The fire department consists of four engine companies, two hose companies and two ladder companies.

The equipment of the engine companies is as follows: Engine Co. No. 1, 750 gallon triple combination carrying 1,000 feet of hose; Engine Co. No. 2, 450 gallon triple combination carrying 1,000 feet of hose; Engine Co. No. 3, 750 gallon triple combination carrying 1,200 feet of hose; Engine Co. No. 4, 750 gallon triple combination carrying 1,100 feet of 2½-inch hose.

Hose Co. No. 5 carries 1,200 feet of 2½-inch hose, as does also Hose Co. No. 6.

Ladder Co. No. 1 is equipped with an aerial ladder while Ladder Co. No. 2 has a city service truck.

The response to alarms is as follows: First alarm, Engine Cos. No. 1, 2 and 3 and Truck Co. No. 1; second alarm, Engine Co. No. 4, Hose Co. No. 5 and Truck Co. No. 2. Hose Co. No. 6 is left in service, and is brought out only by special call.

Water Supply

The water supply in this city is very satisfactory, there being plenty of good size mains throughout the commercial section and with a pressure of 75 pounds at the hydrant.

In the immediate neighborhood of the fire there were sufficient hydrants to take care of all of the engine and hose companies.

Property Involved

The layout of fire building and surrounding buildings is shown in the sketch herewith.

The fire originated in the paper box plant, a five story structure of about 10,000 square feet area. To the north of this plant was a three story printing plant, while to the south of it was a five story machine shop, engaged in manufacturing small tools.

Other buildings in the immediate vicinity of the fire are indicated in the sketch.

The fire building was occupied on the ground floor by packing and shipping operations. Second and third floors, were engaged in manufacturing paper containers, while the top two floors were largely employed for storage of paper stock.

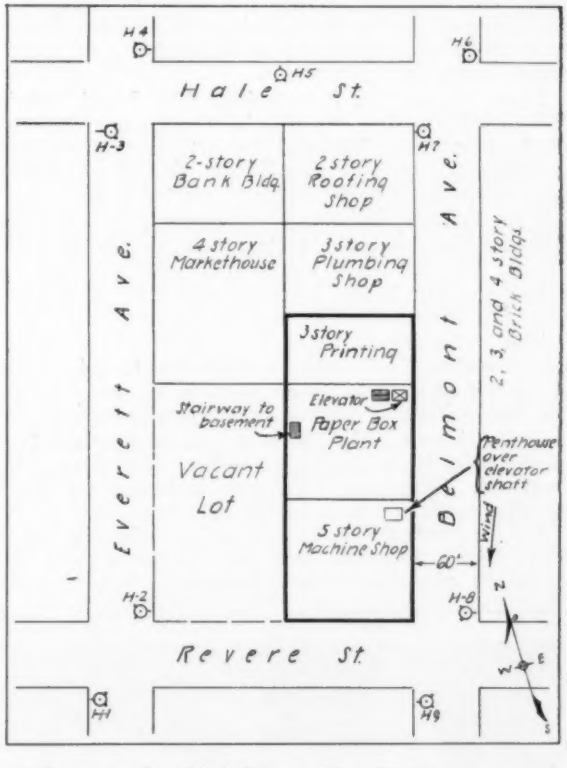
The excess weight of the stock on the top floor probably had a great deal to do with the collapse of the building and resulting spread of fire.

The combination freight and passenger elevator and the stairway alongside were the only available means for employees of the factory to get to the street.

Fire escapes had been placed at the rear of the plant, but were subsequently removed to make room for a new fire tower which was to be built.

The fire occurred at lunch time when the 150 employees were in the lunch room on the third floor. The fire started in the basement and was discovered by a truck driver who was delivering goods to the plant. With the assistance of the two shipping clerks, who were assisting him in unloading, he attempted to extinguish the fire, but after working at it for a few minutes decided that it was beyond his control and thereupon went upstairs and 'phoned the fire department. The fire department sent out a first alarm assignment consisting of engine companies Nos. 1, 2 and 3 and truck Co. No. 1.

Upon arrival of the department, it was found that the employees were all trapped above the fire, some having gone to the roof and the balance remaining in



windows on the third floor. The elevator car was in the basement at the time, and it was impossible to get to it. The fire department devoted all efforts during the first ten minutes toward getting the employees out, and this they did by stretching in two lines from the first engine arriving to protect the stairway, while the employees were escorted to the street. By this time fire had risen in the elevator shaft, beside involving the basement, and had extended into the top floor.

Suggested Method of Handling the Fire

Up to and including the saving those imprisoned in the fire building, the operations of the department cannot be criticized.

The placement of subsequent lines was not bad, and had not the paper box plant wall collapsed it is likely that the fire would have been confined to the one building, for attention would probably have been given to the machine shop in a more thorough manner than it was when the 3 story printing shop was suddenly involved by fire.

The suggested method of handling this fire, subsequent to the saving of life, is as follows:

In the first place, the great area of the basement of the paper box plant, together with the contents, and the extent of the fire would justify the transmission of a second alarm without waiting until it was shown by the progress of the fire that the task required additional apparatus. This should have been done early in the operation.

The placement of engine No. 1 at hydrant No. 8 was satisfactory, for it made possible the laying of two lines at once to cover vertical passageways.

Engine Co. No. 2, stationed at hydrant 7, was a satisfactory placement also. This line should, however, have been sent to the top floor by way of stairway, as its safety would be assured by the presence of lines from engine Co. No. 1 at the stairway. This line going to the top floor might have held the fire or extinguished it and made possible confining of subsequent efforts to the basement.

Place Engine No. 3 at hydrant No. 2 and stretch line to top floor by way of ladder This line working at the rear of the building (from the vacant lot) together with the line from Engine Co. No. 2 should have been able to hold the fire on the top floor.

Hose Co. No. 5, placed at hydrant No. 9, should stretch a single line to operate with cellar pipe through ground floor of paper box plant. This will help in killing the fire in the basement and holding it from extending until additional lines are in service.

The first company arriving on second alarm should station engine Co. No. 4 at hydrant No. 1, and stretch single line to the rear of the plant, to operate through the floor with a cellar pipe on the basement fire.

Assign hose Co. No. 5 to stretch in a second line from Engine Co. No. 4 to operate down rear stairway in basement. This same company, if manual strength permits, may stretch a second line from engine Co. No. 3 to operate down the front stairway into the basement. This gives four lines operating into the basement and two lines onto the top floor together with two lines on the main floor. In the event that fire gets away from this assignment, a second stand will have to be made to cover the plants to the north and south.

In this connection, a periodical survey of both of these buildings by members of truck company will prevent a happening such as was experienced at this fire when a second blaze was started at the bottom of the elevator shaft in the five story machine shop due to the dropping of embers down the shaft.

It is believed, however, that the above assignment of lines can handle the situation.

New York Makes Rum Boat Even Wetter

The "Halcyon," a captured rum boat, was used as a target to demonstrate the fire extinguishing ability of the "John Purroy Mitchel," New York City's most modern fireboat. The fireboat is an oil-burning craft with the most modern equipment.

Only Two Per Cent of Fires Get Away

There are very few fires that got away last year from the point of origin, according to a study made by the Continental Insurance Company covering fifty large cities in the United States. The study included Chicago, New York, Philadelphia, Los Angeles and other leading cities. About ninety-eight per cent of the 147,183 fires which started last year were confined to the places where they originated.

C. W. Pierce, vice-president of the company, said:

"A tremendous increase in the use of motor apparatus and generally improved equipment was also an important factor. Our survey shows that, on the whole, the cities in the South and Southwest were less successful in holding fires in check than were those located in other sections of the United States, but this was probably because climatic conditions permit less substantial contraction rather than because of extinguishment."

Records of 1927 fires confined to the point of origin for a number of cities are as follows: New York, 99 per cent.; Chicago, 96 per cent.; Los Angeles, 98 per cent.; San Francisco, 97 per cent.; New Haven, 99 per cent.; Jacksonville, 98 per cent.; Indianapolis, 98 per cent.; Grand Rapids, 99 per cent.; Louisville, 96 per cent.; Baltimore, 99 per cent.; Boston, 98 per cent.; Springfield, Mass., 99 per cent.; Minneapolis and St. Paul, 99 per cent.; Camden and Jersey City, 99 per cent.; Philadelphia, 99 per cent.; Seattle, 98 per cent., and Milwaukee, 99 per cent.

Chief Ringer Outlines Future Plans

A program of improvement for Minneapolis, Minn., stretching over a five-year period has been formulated by Chief Charles W. Ringer and sumbitted to the city council.

Chief Ringer's improvement budget recommends that the council authorize construction of a large central fire station in the downtown section, at 219 Third street south. The cost of a modern three-story station house, which he says is needed, would approximate $150,000. This expense, according to the chief, could be offset to the extent of $141,500 through sale of the properties of three downtown stations, which would be abandoned and their fire companies transferred to the new building. The city already owns the land, having bought it some time ago as a site for a new fire station, Chief Ringer points out.

Company No. 1, according to the Ringer proposal, would be moved to the new building from its present station at Sixth avenue south and Third street. The latter building, worth $47,000, could then be sold and the proceeds applied to the cost of the new station. Company No. 3, now located at Third avenue north and Second street, also would be transferred and $19,500 could be realized from the sale of the prsent quarters. Lastly, the building at 19 Fourth street north, just off Hennepin avenue, valued at $75,000, could be sold and Company No. 10, now stationed there, could be moved to 219 Third street south.

The recommendation also calls for razing of the station at Third avenue south and Twelfth street and erection of a new building, costing $80,000, to house Company No. 6. Chief Ringer says that the present structure is 45 years old and in such shape that the cost of complete repairs would be prohibitive.

The new fire equipment which the chief wants the council to buy for the fire department and pay for from bonds consists of 10 heavy-duty pumping trucks, two to be purchased in each of the next five years. These machines cost $15,000 each, making a total of $150,000.

Morris, N. Y., Receives Pumper—A 750-gallon Republic pumper has been delivered to Morris, N. Y. The purchase was made possible by a village appropriation of $5,500 and several donations.

Preventing Fires in the Small Town

Some Peculiar Results of a Fire Prevention Campaign—Chief Needs Diplomacy to Succeed—Troublesome Hazards Encountered

By CHIEF W. W. STEPHEN, Fire Department, Southern Manganese Corporation, Anniston, Ala.

SOME peculiar problems and experiences are met with by the chief of the small town fire department. The author, who has had much experience along this line, writes feelingly of the matter:

The problems of operating a small town or village fire department are at times very similar to those of a large city department, on a correspondingly smaller scale. In like proportion will the small town fire officer find the practice and enforcement of fire prevention to be of value to him in the same ratio that it is valuable and even indispensable to his brother officer in a larger organization.

Chief W. W. Stephen

On the other hand it seems often the case that carrying out fire prevention practices in a small town is more difficult than in a larger one. The personal equation is greater in a community of limited size, where one must necessarily know everyone else, the people are less accustomed to the idea of having their affairs regulated by public safety departments and the average small town property owner is apt to interpret the enforcement of any fire prevention ordinance, whether it is relative to construction or housekeeping, as an attempt to interfere with his own personal affairs.

Small Town Fire Chief Needs Diplomacy

The path of a well meaning small town fire chief is not likely to be one strewn with roses. It is generally one that requires the guile of a serpent and the exercise of diplomacy as well as authority.

The writer once had the experience, while administrating the affairs of a small town fire department, of carrying on a fire prevention campaign that was so successful in its results that instead of having fifteen or twenty working fires during this time it was not necessary to run water through a section of 2½-inch hose for fifteen months, although dry lines were laid to back up chemical lines several times.

Peculiar Result of Fire Prevention Campaign

The result of this record was that instead of impressing the value of fire prevention measures on the people of this town it lessened the regard of many of them for the department because they did not have any "good" fires and they considered that with fewer fires less fighting facilities were needed.

The small town chief, although not having an extensive high value district, will frequently have quite an assortment of down-town risks.

Some Troublesome Hazards

Ordinary buildings, with people rooming upstairs over them and other flimsy exposures closely adjoining them are frequently used as garages, and the open stove is a common way of heating them.

In small town restaurants the cooking is often done on kerosene or even gasoline stoves, which is a prolific source of trouble.

In the case of drug stores, hardware, dry goods and other kinds of stores, good housekeeping is the secret of safety. Too often there will be, unless this is prevented, a back room used for storage and piled with old packing cases, excelsior and waste paper. Also many small town emporiums will carry a large stock of matches, which may be the source of grief.

The Problem of "Pressing Clubs"

In so called "pressing clubs," generally allied with barber shops, the free and open use of gasoline as a cleaning fluid occasionally brings disaster and sometimes death. The writer on an inspection once found a pressing and cleaning establishment operating in the rear of its premises, a steam boiler, very dangerous both from fire and safety standpoints.

The proprietor, upon being appraised of this, readily agreed to stop its operation within ten days. He did stop operating it himself, but he promptly sold it to a trusting purchaser who was unaware of its condition and was merrily operating the outfit when another inspection was made.

This individual, when notified of the matter, promptly sold his business to another delighted and uninformed buyer, who at once began using the defective apparatus at full pressure.

The writer, confronted with the prospect of having to do the whole thing over again indefinitely, sought reinforcement from the Chief of Police, who promptly closed up the offending business as far as the dangerous boiler

"THE path of the well-meaning small town fire chief is not likely to be one strewn with roses. It is generally one that requires the guile of a serpent and the exercise of diplomacy as well as authority."

was concerned, and the writer had the experience of being referred to by the unfortunate pressing club owner as the "meanest man in town."

Danger From Careless Use of Gasoline

The following is another personal experience in a small town department, illustrating the danger from the careless use of gasoline. A negro working in a pressing club, in the rear room of a barber shop, broke a quart bottle of gasoline which became ignited from a bad lamp cord on a pressing iron, starting a fire that immediately involved part of the room and forced the barbers and their half shaved patrons to flee for their lives. Two occupants of bath tubs in another rear room also further entertained the crowd in the street by running out attired in bath towels.

Some one pulled an alarm box across the street which blew the fire siren at the engine house a block away. The department responded immediately, laying a 2½-inch line and having a stream through a 1-inch controlling nozzle in two minutes. A quick sweeping dash or two of the stream killed most of the fire in the back room immediately and it was finished and overhauled with a chemical line to prevent further water damage.

Such occurrences as these are commonplace in every fire officer's experience, and are only given to mention this particular kind of risk.

Firemen Reclaim Toys for Poor Children

(*Continued from page* 934)

but only request of you to give us the discarded toys about your home.

"'If you phone 2376 or 2055, arrangements can be made to haul your donation to the City Building. In the basement of No. 1 Hose House, a workshop has been arranged so that the firemen in their leisure moments can make the necessary repairs and repainting.

"'Thanking you in advance for your cooperation you will give us, we remain,

"'Yours very truly,

"'THE COMMITTEE.'

"The displayed toys, for which the pick was chosen, included small chairs, high chairs, hobby horses, baby walkers, scooters, tin street cars, automobiles and dolls. We discouraged the contribution of flimsy cheap toys that last the normal youngster but a few hours. They would not be worth the time and material expended in reclaiming them.

"The condition of a substantial wooden toy cannot be too far gone for Chief Miller's crew. It was given one small heavy rocking chair which appeared doomed surely for the fire. The chair was minus an arm, a leg, two rounds and the seat was split. A new arm, leg and rounds were turned in the lathe and the seat glued together. A heavy coat of paint and a new cover for the seat made it appear like a new chair fresh from the factory and fully as serviceable.

"Many of the toys are unbroken and need only a coat of paint to prepare them for distribution next Christmas. Most of these came from parents of children who found the toys were outgrown and worth retaining only as keepsakes.

"Each shift at the fire station is organized into a complete reclamation squad with certain men proficient at the various tasks. The shift changes working hours each week and the one on day duty works on the toys. Chief Miller is always on duty during the day and is one of the hardest workers in the shop.

"Killing time between alarms is one of the chief 'jobs' of a fireman and to most of them the inactivity is distasteful. All those at central station in Richmond have expressed great satisfaction at being able to employ the time in a philanthropic enterprise. Formerly most of the time was spent at card tables. The work offers a light form of exercise and the variety of repairing tasks creates interest.

"Next December the toys will be distributed to needy children by a fireman acting as Santa and riding a big red fire truck. The occasion is expected to be given considerable publicity and to build much good will for the firemen, our paint company, newspaper and others aiding in the project. Names and addresses of the children to receive gifts will be provided by the proper welfare agencies and cleared to prevent duplication. The agencies will be permitted to recommend what toys are most suitable for the various under-privileged waifs on their lists.

"Appeals for discarded toys are being carried incessantly by the newspaper throughout the year. At housecleaning time, the donations increased heavily. As soon as the toys are completely repaired and repainted, they are placed in cartons or wrapped in paper to prevent dust from settling on them and to forestall damage from atmospheric conditions. At various times during the year window exhibits will be arranged in downtown business places to advertise the project. Appeals for donations are being made in several other ways.

"This toy reclamation project is not a new one as it has been employed in various parts of the country. Everywhere it has been endorsed as most worthy of support and has been successful."

A Typical Window Display of Toys Reconstructed by the Fire Department. The Paint Used in This Work Was Donated by This Firm

Jacksonville Men Proud of Their Chief

Chief H. R. MacMillan who was appointed head of the fire department in Jacksonville, Fla., on January 1, 1926, has succeeded to an unusual degree in winning the respect of his men, and in getting a number of improvements through to better the fire service.

In April, 1927, an engine company was placed in service in the Northwest Springfield section, No. 10 Engine Company in Riverside on July 15, 1927, in February, 1927, a new truck company, and on April 16, 1928, No. 11 Engine Company at Talleyrand. All the men were outfitted with new rubber coats and helmets, and new style of cap badge.

He worked hard to get an increase in pay for men in his department without any thought for himself.

DANIEL G. AID.

Daretown, N. J., to Form Fire Company—A meeting has been held in Daretown, N. J., to form a fire company. A committee has been appointed to consider fire apparatus.

Convention to be Held in Huntsville, Tex.—The annual convention of the East Texas Association of Firemen will be held in Huntsville, Tex., on November 8. To help defray convention expenses, the town is raising funds by selling buttons.

Reading, Pa., to Install Fire Alarm—Reading, Pa., is investigating the merits of fire alarm systems before placing an order for a new system estimated to cost between $90,000 and $100,000.

Hackensack, N. J., Out for Two-Platoon—Petitions are being circulated in Hackensack, N. J., urging the adoption of a two-platoon system. Chief William Ziegler has stated that the new arrangement, if passed, would give the city better fire protection at only a slight extra cost.

Salem, N. J., Loses in Aiding Others—Salem, N. J., is wondering who shall pay for a large amount of hose that was lost while aiding a nearby community in fighting a fire. The town feels that it should not be made to pay for any loss suffered by the department in such work.

WITH THE EDITOR

Where in 1928? One of the contested features of the coming convention of the International Association of Fire Chiefs at Philadelphia on October 17-20, will, no doubt, be the selection of the next place of meeting. There are, naturally, always several cities which are candidates for this honor. Last year there were five such municipalities—Chicago, Philadelphia, St. Paul, Minn., Hamilton and London, Ont., Can.

Chicago made a very strong bid for the meeting of 1928, which eventually went to Philadelphia, in honor of the newly elected president of the association. It is very likely that Chicago's claim will again be pressed this year for the honor of entertaining the association in 1929.

St. Paul's invitation was for 1928 or 1929, and, of course, still stands for next year.

It is pretty certain that other candidates for the privilege of having the chiefs meet in their city will materialize and the result will be a lively contest to be decided by the vote of the members at Philadelphia.

Specification Hose Again to the Fore An association of municipal officials (not fire chiefs) recently endorsed the work of its member who is serving as a committeeman of the American Standards Committee, which is engaged in preparing a set of specifications for fire hose. In so doing the Association substantially endorsed the specifications.

This subject of specification hose is one which was settled by the International Association of Fire Chiefs away back at its Denver meeting. At that time they almost unanimously opposed the principle of specification hose.

It is not surprising that an association of municipal officials, not thoroughly acquainted with the rigors of fire department work, would endorse "specification" hose. Standards have proven themselves satisfactory in industrial lines and the by-word at the present time is standardization. They overlook, however, what standardization of fire hose actually means. When a purchaser buys hose under specifications, and the specifications treat solely with the material going into the construction, he is apparently not interested in the style of construction, or methods employed, or the quality of workmanship.

If you could give the same piece of cloth to five different men to make five different suits of clothes, there would not be two of them of the same value. The one made by the expert tailor, however, would probably give much more service than the one made by the inexperienced workman, although the material might be exactly the same in each case. It is also true of a pair of shoes, and unquestionably true of fire hose where the highest type of skill is required.

Service is actually what is bought and sold. That is why a railroad ticket from New York to Buffalo does not cost as much as from New York to Chicago, although the ticket may be exactly the same size and look the same.

Specifying the strength of fire hose is very unlike specifying the strength of any other device or appliance used in fire departments. Wherever metal, for example, is used there is not that gradual weakening due to aging which is encountered in fire hose. Metal, for instance, will last ages without weakening and it is only a question of specifying the initial bursting pressure, but with hose you have that weakening due to aging which is the governing factor.

Hose intended for severe fire department use should certainly be built to carry a much heavier pressure than the maximum pressure which it will be subjected to in use in order that there will be a surplus strength which may be given up from year to year through natural aging without bringing the hose too rapidly down to the danger point.

Here is the chief danger of specification hose. Specifications are established, and these specifications given to rubber manufacturers, including hose manufacturers, for bidding. No credit is allowed for excess strength built into the hose, nor additional credit for highly skilled workmanship. It is only a question of building hose which will meet the specifications—and that is all. The concern which can build the hose the cheapest, using the poorest quality of materials permissible, and just get within the specifications is the one which will get the business. In other words, it is building down to a minimum, rather than up to a reputation. It is not surprising, therefore, that the concerns which get the bulk of the specification hose business are not fire hose manufacturing specialists, but rather the general run of rubber factories where they build everything from a teething ring to a tire. The old established manufacturers of hose, who have built up enviable reputations, cannot afford to put out hose as cheaply as can the mechanical rubber manufacturers. In the first place, the hose specialists have in their employ skilled artisans whose sole duty it is to build hose, and build life and service into it. With such organizations the factory force must be maintained, for the work is so highly skilled that ordinary laborers cannot be assigned to it when a big rush of business comes through.

Municipal officials too often have little interest in the troubles of the fire chief and what he will have to subse-

quently put up with at fires where inferior hose which has been purchased for him might burst and hazardize the lives of his men as well as the property he is protecting. Such officials are willing to cut the efficiency of the fire department in order to have it said that they are economical in their management of city affairs.

The chief is the one who is held responsible, not only for the destruction of property, but for the lives of his men as well. He has a right, even as a subordinate or appointee, to ask for the very best that can be had. And there is not a fireman, voter, or taxpayer that would not be on his side, knowing the conditions that have to be met at all times, conditions which might mean the endangering of the entire city by fire.

In view of these conditions it would have been well for that association of municipal officials to at least have called upon some of the prominent fire chiefs of this country for their advice before endorsing specification fire hose. Above all things, fire hose is one article in the fire service which cannot be built too good. It is one article which should be above price. It is one article which should be bought only from specialists in the line, and not from those concerns who only take a fire hose order now and then when their other lines are slack.

Electrical Hazards and the Chief

A matter that concerns the chief of the fire department quite intimately is the growing number of electrical fires. Recent statistics show that such fires are largely on the increase. This fact arises from either the lack of ordinances providing for standard electrical appliances, fixtures and installation or in laxity in the enforcement of such ordinances by the authorities.

Amateur installation of electrical fixtures is largely responsible for this condition, but not entirely. Some unscrupulous retail dealers do not hesitate to sell to unsuspecting customers heating and lighting devices which are unsafe to use on electric lighting and power circuits. The adoption of any such device by buyers is apt to result in trouble later.

The chief and his men, in their work of inspection, can do much toward warning the householders and tradespeople called upon, to be careful in using electrical devices and to be sure that they conform to the standard and are safe to install upon their circuits. These fire department inspectors can also point out that amateur installation of wiring and electrical devices by unlicensed electricians is not only unlawful, but is also frought with the greatest hazard from the fire standpoint. If the attention of the individuals called upon is called to this fact, there will be less likelihood that they will resort to this dangerous practice as a measure of supposed economy.

Mechanicsburg, O., to Buy Apparatus—A resolution has been passed to issue bonds for the purchase of fire apparatus.

Providence to Erect Fire House—Contracts have been let for the construction of a combination station to house a hose and a ladder company.

Electrical Fires Have Increased

Public utilities have made it possible for more homes to enjoy the benefits of electrical appliances, but indirectly they have caused the possibilities for more electrical fires. Ten per cent of the fires can be traced to electricity according to H. E. Maxson, vice president of the Continental Insurance Company who investigated the causes of fire losses.

The number of fires from gas flames, oil lamps and other hazards of older days have been reduced because new appliances have supplanted the other devices. Mr. Maxson said:

"This situation has developed because of the widespread use of sub-standard installation and equipment. Our analysis discloses that, owing to the lack of organized restrictions, a large percentage of the electrical supplies and heating and lighting devices sold by retail stores at the present time are unsafe for use in electric lighting and power circuits.

"Our records show that in Greater New York, which may be considered to present conditions that are fairly typical of those in all the larger cities of the country, 26 per cent of the electrical fires during the past nine years and 32 per cent of the money loss caused by these burnings were directly chargeable to defective and carelessly used portable electric heating devices.

"Short circuits account for approximately 10 per cent of the electric fires, while 8 per cent of the blazes are due to the flexible wiring employed to connect lamps, toys and numerous other attachments; the cords become frayed, kinked and twisted and sometimes are also perforated by carelessly driven nails."

Milwaukee Wants Administration Building—In his budget for 1929, Chief Peter Steinkellner has asked for a new administration building on ground owned by the city. Should it be erected, Engine Company No. 1 will move from its present quarters to the new building. The new building is estimated to cost $200,000. The chief also wants $300,000 for a large fire-fighting pipe line to be laid south of the Kinnickinnic river. The line is intended to take the place of a fireboat. He also hopes to remodel the present department repair shops. Future plans call for abandoning two fire stations and moving the companies in.

—And Now the Firemen Take to Water

Firemen have always been affiliated with water. To make the union more complete, the above rubber suit and accessories have been devised for use of Berlin, Germany, firemen. The equipment has been designed for use in fighting fires while in deep water.

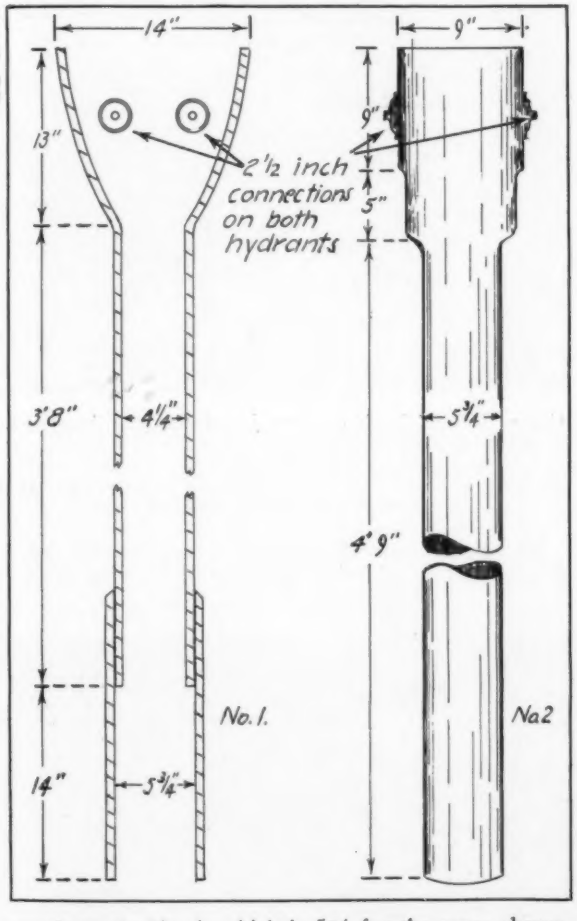
Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified.

Pressure Loss in Fire Hydrants

To the Editor:

Herewith you will find a crude sketch which represents two fire hydrants. No. 1 is of a type in use. No. 2 is an imaginary one. My questions are: How much, if any, will the pressure be decreased by providing for a larger work barrel, say 5¾ inches in diameter over the



one shown in No. 1, which is 5¾ for the space shown, then diminishes in size to 4¼ as indicated?

Fifty pounds pressure is now easily obtainable at the 2, 2½ in. openings as shown in No. 1.

Would the pressure be decreased to any extent by providing for a larger area volume such as is shown in No. 2, which provides 5¾ inch for the entire length of the barrel? Assume both of these hydrants were sitting side by side on the same main, what would be the difference in pressure, if any?

J. K. A.

Answer: It is safe to say that the pressure difference in these two hydrants would be almost negligible. The larger part of the pressure lost in fire hydrants is lost as a result of change in direction of flow: For instance, water enters the hydrant barrel horizontally and then suddenly takes a vertical direction; reaching the top of the hydrant it again takes a horizontal direction. It is the flow of water around these short angles which causes the drop in pressure, rather than the flow through the short straight barrel.

For a flow of six or seven hundred gallons per minute from each hydrant, it is doubtful if there would be as much as two pounds difference in pressure.

Effect of Layout on Discharge

To the Editor:

In your issue of September 5, 1928, page 776, second column, under "Questions and Answers," the matter of flow of water comes up and how to arrive at approximately the flow under various pressures, in other words you say "multiply the rated capacity by your pressure, 120 pounds, and divide by any engine pressure you desire to employ, and the answer will be the approximate discharge at this other pressure in gallons per minute."

In this method you do not take into consideration the length of hose in use in any way. How does this then work out? Do you mean that no matter what length of 2½ inch hose in the line, (in reason, of course) that the flow of water from the play pipe would be the same, at the same pump pressure?

In other words you say that a 1,000 gallon pumper at 180 pounds pressure would deliver approximately 666 gallons per minute; would the delivery be the same whether 300 feet or 800 feet of hose were being used? I have always been instructed to believe that the length of hose made a big difference in the friction loss between the pump and the playpipe, and the longer the layout of hose the more friction loss; but, according to this "quick-work" formula, the length of the line is apparently not taken into consideration.

This is a mighty interesting problem and, if this is correct, will help the firemen a whole lot in getting a line on the amount of water they are playing on the fire.

I await your reply with deep interest.

E. F. S.

Answer: When we determine what the discharge from a pumper will be at a certain pressure we naturally assume that such a layout of hose is employed as will give the pressure we are considering at the engine.

The method suggested of determining the discharge at any particular pressure is based upon the power of the motor, rather than upon the design of pump, layout or hose, etc.

We might state it this way: to get the discharge from any engine with any particular pressure at the discharge outlet, we multiply the rated capacity by the rated pressure and divide by the pressure desired at the outlet. In this way we might use the discharge gate and throttle down the discharge to such a point that we will get at the discharge gauge the pressure desired. Then, at this pressure we should be getting the discharge through the throttled outlet as calculated.

Where hose lines are employed, the length and size of hose lines, the layout, and nozzle diameter, all affect the engine pressure. The layouts and size of nozzles must, of course, be so arranged as to give the desired discharge pressure at the discharge outlet in order to get the calculated discharge from the pumper at the pressure being considered.

As a specific example, suppose we are testing a 750 gallon

pumper. If we are testing it at 100 pounds discharge pressure, we use two 50-foot lines of 2½-inch hose, and a 1¾-inch nozzle.

If 120 pounds pressure is wanted at the pump, we employ two 100-foot lines of 2½-inch hose with 1¾-inch nozzle.

If 140 pounds is wanted at the pump, then we employ two 150 foot lines of 2½-inch hose with 1¾-inch nozzles, while if 160 pounds is desired, we use two 250-foot lines of 2½-inch hose with 1¾-inch nozzle.

For each different engine pressure we would have to have a different layout, if we were testing the engine for maximum capacity at these different pressures.

VALUE OF FOAM DEMONSTRATED IN LARGE OIL TANK FIRE

Experiment Staged by American-LaFrance and Foamite Corporation at Olean, N. Y.—Capacity of Tanks 30,000 Barrels

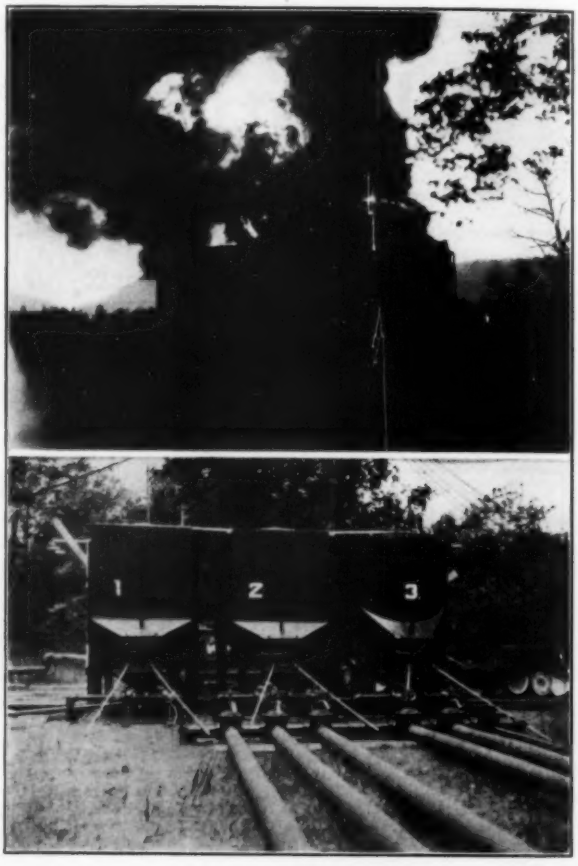
IT has been definitely proven that large oil tank fires can be successfully fought with foam generators. Tests to obtain information on this subject were staged at Olean, N. Y., by the engineers of the American-LaFrance and Foamite Corporation, working in conjunction with the engineers of a prominent oil company.

Two large storage tanks, each 93 feet in diameter, were used in the tests. One tank was filled with water and was used as a reservoir from which a LaFrance 1,000-gallon pumper drafted water for the generators. The second tank was used for the fire tests. The wood roof and all supporting roof members in this tank were completely removed.

The tests tank fire wall area was surrounded by a net work of five water hydrants for emergency use on brush fires and for breaking down the foam blanket after the fire tests. A LaFrance 500-gallon pumper was connected up so that it could deliver water to this hydrant system.

Three Foamite Generators were arranged parallel so that their outputs could be delivered singly or severally into a common discharge manifold. Three steel bins, each having a capacity of 12,000 lbs. of Foamite Generator Powder, were installed adjacent to the three generators. The generator powder was supplied in steel drums having a net capacity of 500 lbs. each. These drums were hoisted to a platform built in the rear of the bins where they were opened and the contents emptied into the bins. With the equipment available, it was possible to charge the three bins in approximately three hours.

The test tank was equipped with five separate foam outlets. Three of these were Foamite delivery chambers and the remaining two were 6" swing pipes. The delivery chambers were mounted on the top ring of the tank and so located that their discharge fell onto float deflectors, hermetically sealed boxes floating on the oil surface and anchored directly beneath the mouth of the chambers. The two swing pipes were of a type commonly used in oil tank construction.



Upper, The Oil Tank on Fire, Just Before the Application of the Foam, Showing the Intensity of the Flames. Lower, the Three Foamite Generators, Arranged Parallel, so that Their Output Could be Delivered Singly or Severally into a Common Discharge Manifold

One thousand barrels of Pennsylvania crude oil were pumped into the test tank and ignited by a waste torch attached to a long

(*Continued on page* 965)

Large Storage Oil Tank, Filled with Water and Used as Reservoir, from which 1,000-gal. Pumper at Left Drafted Water for Generators. The Tank Which Was Used in the Test Was of the Same Size. Three Generators are in Foreground.

SPITE WORK BELIEVED CAUSE OF NOTED RACING STABLES FIRE

Famous Horse "Reigh Count" Saved—Eleven Thoroughbreds Lost Valued at $225,000—Stables Owned by Yellow Cab President

SPITE work by gangsters, as a sequel to the bombing of Yellow Cab Company garages in Chicago, is believed the cause of destruction of racing horse stables owned by the president of that company, and the loss of eleven thoroughbreds.

Oil-soaked material was thrown into the stables situated near Cary, Ill. Some lighted material was placed in the hay loft. Fire was burning fiercely at both ends of the stable and the fumes overcame a number of horses before they could be led to safety.

All That Is Left of a Famous Racing Stable

The stables which housed among others, Reigh Count, 1928 Kentucky Derby winner, was constructed of brick, valued at $25,000. Nothing but charred hay and twisted steel remai.n

Reigh Count, famous horse, was saved by its trainer who has quarters on the farm. The trainer was awakened by the snorting of fear-crazed animals, and by the smell of smoke. He rushed into the horse's stall, tied a riding shirt over the horse's eyes and rode the animal out into the open. He went back and rescued ten other thoroughbreds in the same way.

The state attorney is working on the theory that the fire was started in an attempt to intimidate the president. There is a taxicab war in Chicago between the Yellow and Checker Cab companies. Several thugs have been rounded up in Chicago.

WHAT'S BURNING

THE following list includes fires of $25,000 loss and over in the United States and Canada, for the periods designated in the headings. These figures, compiled from telegraphic reports, are based on estimates made at the time, and are subject to latter investigation and consequent revision. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousands.

Week Ending October 5

MAUCH CHUNK, PA.—Printing plant of J. C. Lisher	25
RUTLAND, VT.—Crestwood Inn damaged	35
COCHRANE, ALTA.—Anderson Block destroyed	30
PORTLAND, OREG.—Property of Bear Creek Logging Co.	80
OMAK, WASH.—Bldgs. of Biles-Coleman Co.	300
PHILADELPHIA, PA.—Breyers Ice Cream Co. plant	35
NORTH WALES, PA.—Bldgs. of Baily Mfg. Co.	125
BELCHERTOWN, MASS.—Grain mill of Ryder & Ware	40
NORTH CRAFTON, MASS.—Crocker bldg. and Allen block	50
PROVIDENCE, R. I.—Bldg. of United States Oil Co.	35
FORESTVILLE, WIS.—Meyers Hotel and adj. property	25
LOS ANGELES, CALIF.—Santa Fe Ave. Mfg. plants	80
JEROME, MICH.—Walworth general store destroyed	25
CARY, ILL.— John D. Hertz stables	180
FORT WILLIAM, ONT.—Gillespie Grain elevator	200
SUMMERFIELD, O.—Business property destroyed	45
WILSON, N. C.—Business property	35
EAST DALLAS, TEX.—Bldg. of Indiana Truck Corp.	65
BRYAN, TEX.—Lawrence cotton warehouse destroyed	175
HEMPSTEAD, N. Y.—Plant of Island Home Laundry	170
BRONX, N. Y.—Morris Mansion owned by N. Klamle	50
MONTICELLO, ARK.—Whse. of Monticello Cotton Mills	25
METROPOLIS, ILL.—Plant of Aartman Lumber Co.	125
MEDICINE HAT, ALTA.—Whse. of Codville Co.	125
SOUTH NELSON, B. C.—Mill of International Pulp Co.	110
BELCHERTOWN, MASS.—Mill of Ryther & Warren	400
YELLOW GRASS, SASK.—F. Scarrow hardware-store	50
ST. RAYMOND, QUE.— St. Raymond College	75
WATERFORD, N. Y.—Northside Garage, Saratoga Ave.	25
BLUFFTON, IND.—Bluffton Buick Co. garage	35
DALLAS, TEX.—Dobson & Co. store damaged	80
OAKDALE, LA.—Plant of Louisiana Public Utilities Co.	100
OKLAHOMA CITY, OKLA.—West Lumber Co. plant & adj. bldgs.	125
BUFFALO, N. DAK.—Cargill Elevator No. 1 damaged	25
BRUNSWICK, GA.—Odum's Sanitarium destroyed	25
JUNCTION CITY, OHIO.—Dormitory at State Brick Plant	35
KANSAS CITY, MO.—Schulze Baking Co. plant damaged	40
CHICAGO, ILL.—Plant of South Millwork & Lumber Co.	55
SYRACUSE, N. Y.—W. W. Bush store and adj. property	40

Volunteers Protect Harrisburg

Harrisburg, the capital of Pennsylvania, is protected by a fire department consisting of 2,700 men. The chief, assistant chief and mechanician are appointed by the city council. No civil service methods are used.

The department consists of sixteen fire companies. The lieutenants and captains of these units are elected by the respective companies. The drivers are the only paid men.

Due to fire prevention activities of the department, fire losses were materially reduced. Fire losses in 1927 were $750,000. For the same period in 1928 the losses are but $62,000.

M. M. Tawney is chief of the Bureau of Fire, and A. L. Patton is assistant chief.

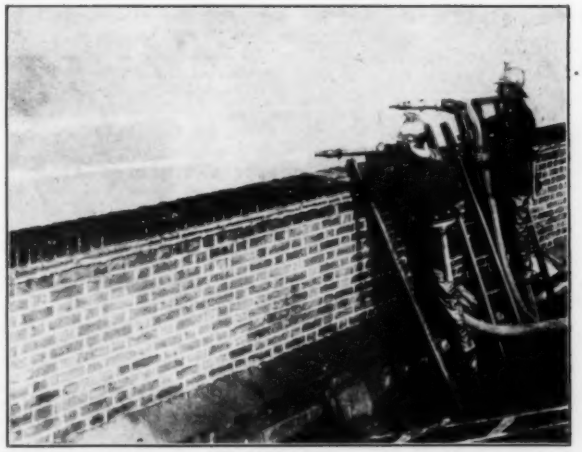
Synthetic Leather Coats Hazardous

A new fire hazard has been brought to the fore with the present style of leather coats and garments for children. The genuine leather coats are not hazardous—but to meet the demand for a cheaper coat, a synthetic leather has been produced.

A seven-year-old boy was wearing one of these coats while playing near a bonfire. Sparks flying ignited the coat and the boy was so badly burned that he died. His father complained to the state fire marshal who ordered the store which sold the coat to discontinue sales. The manufacturer was notified to stop sending such garments into the state. The father brought action against the store to recover $25,000 damages.

Pyote, Tex., Orders Pumper—A 500-gallon pumper has been delivered to Pyote, Tex. The apparatus was purchased for $6,750.

New Fire House for Yonkers, N. Y.—Purchase of a site has been authorized in Yonkers, N. Y., on which to erect a combination fire and police station.



Two Thousand Families in London Evacuate Their Homes

Fire that broke out in the southeast section of London, England, endangered the safety of two thousand families. Police rushed about in taxicabs warning the people of the danger. Thirty-two engine companies manned by two hundred firemen fought the flames for more than two hours. Doctors and nurses from St. Thomas's hospital, were in attendance. The wall against which the two firemen are leaning, swayed visibly the whole time.

New Standpipe Rules For New York

Recently Adopted by Board of Standards and Appeals—To be Published Serially in These Columns

AS OUTLINED in the last issue of FIRE ENGINEERING, *the first installment of the new "Standpipe-Fire Line Rules" of New York City is published herewith. The original rules were adopted by the Board of Standards and Appeals of that city on June 22, 1922, were amended July 20, 1923, and again on May 18, 1928. The finally adopted form, as reproduced herewith, were adopted July 20, 1928. Through the courtesy of Chairman William E. Walsh, of the Board,* FIRE ENGINEERING *is enabled to publish the entire new rules serially.*

These new rules are formulated largely through the efforts of Peter J. Maher, Fire Prevention Inspector attached to the Division of Fire Appliances of the New York Fire Department.

RULE 1. PLANS.—A preliminary set of paper plans and cross sections, drawn clearly and distinctly, to a scale of ¼-inch or, by permission of the Fire Commissioner, ⅛-inch to the foot, for each proposed standpipe (fire line) installation or alteration, shall be submitted to and approved by the Fire Commissioner before the work in connection with the installation is started. Such preliminary plans shall show the size and location of the standpipe (fire line) risers, size and location of siamese and cross-connections, valves, tanks and connections, pumps, hose stations, lengths of hose, etc., and the location of stairways and enclosing partitions in relation to the standpipe risers and hose stations. From these approved preliminary plans, three sets of plans on cloth, in clean and clear detail, shall be filed for final approval by the Fire Commissioner. A certified copy of approved plans shall be forwarded to the Bureau of Buildings by the Bureau of Fire Prevention. Such application and specification forms as may be prescribed by the Fire Commissioner shall accompany preliminary plans. If an automatic sprinkler system is provided throughout the building or in any portion of the building, the plans shall include a note to that effect.

RULE 2. APPROVAL.—Before acceptance all standpipe (fire lines) shall be tested, for at least one hour, under a hydrostatic pressure of not less than 300 pounds per square inch at the street siamese, and at each pump supply level, or such additional pressures as may be required to give 100 pounds at the highest hose outlet supplied by such pump, except that when a change is made in a source of supply, or minor changes are made in an existing equipment previously approved, the system shall be tested to a pressure sufficient to give 50 lbs. per sq. in. at the highest story hose outlet. These tests to be made in the presence of a representative of the Fire Prevention Bureau.

No valves, risers, or other material portions of any standpipe (fire lines) equipment shall be covered or permanently concealed until tested and approved, in writing, by the Bureau of Fire Prevention.

When entirely completed in accordance with the approved plans, and as per test herein provided for, application shall be made to the Bureau of Fire Prevention for inspection of the completed installation. When the standpipe equipment is approved, the applicant will be so advised, in writing, by the Bureau of Fire Prevention.

When deemed necessary by the Fire Commissioner, sectional diagrams of the standpipe (fire line) equipment in buildings of large area or height, not more than three in number and printed on cloth in size not less than 8½ x 11 in., shall be filed by the applicant for the use of fire companies in the district in which the premises are located.

RULE 3. STANDPIPE-FIRE LINE CERTIFICATE.—The engineer, superintendent or persons in charge of the standpipe-fire line system in all buildings exceeding eighty-five feet in height shall be registered, and submit to an examination in the Fire Department. Upon evidence of fitness to properly operate and maintain the standpipe system he shall be granted a Certificate to that effect. The certificate shall contain the full name and a small photograph of the holder.

Day and night service shall be maintained in all buildings exceeding 250 feet in height in which there is a fire pump.

Theatre buildings provided with fire pumps shall have at least one certified operator on duty during every performance. Buildings of large areas, industrial plants, amusement parks, etc., shall have at least one certified operator on duty when deemed necessary by the fire commissioner.

RULE 4. MONTHLY INSPECTION.—All valves, hose, tools and other auxiliary fire appliances shall be kept in perfect working order, and at least once a month the person holding certificate of fitness shall make a thorough inspection of all the fire appliances to see that they are in perfect working order and ready for immediate use by the Fire Department. Fire pumps shall be tested every 30 days by the person holding the certificate of fitness.

He shall also instruct all employees under his charge in the use and practice of all auxiliary fire appliances. A detailed record of each inspection shall be kept on the premises for examination by a representative of the Fire Department.

All standpipe equipment in buildings exceeding 85 feet in height shall be subject to a flow test with a pressure of not less than 50 lbs. at the top floor outlet, at least once in every two years, test to be conducted in the presence of a representative of the Fire Department.

RULE 5. APPROVAL DEVICES.—All devices approved for use in new standpipe fire line equipments shall bear the manufacturer's name and the date of and the number of the approval. Certified copies of the approval, working drawings and photographs of the device approved, shall be submitted to the administrative authority having jurisdiction for preservation as records and reference data.

RULE 6. ELEVATOR IN READINESS.—In every building exceeding 150 feet in height at least one passenger elevator and in buildings in course of construction a hoist or elevator shall be kept in readiness for immediate use by the Fire Department during all hours of the night and day, including holidays and Sundays, and a man competent to operate the elevator shall be present at all times.

RULE 7. AREA OF BUILDINGS.—For the application of Section 581 of Chapter 5 of the Code of Ordinances the area of a building shall be taken as the area within the exterior walls, or the area between fire walls.

When the fire walls are constructed in accordance with Section 371, Chapter 5 of the Code of Ordinances, and all openings are protected on both sides of fire wall or walls with automatic fireproof self-closing doors, the area within such fire walls or exterior walls and a fire wall, shall be considered a separate building.

RULE 8. HEIGHT.—The term "height" as applied to a building or structure, as described in Chapter 5, Code of Ordinances, means the vertical distance measured in a straight line from the curb level, to the highest point of the roof beams in the case of flat roofs, and to the average height of gable in case of roofs having a pitch of more than 20 degrees with a horizontal plane.

RULE 9. STANDPIPE EQUIPMENT shall consist of a system of piping connected to one or more approved sources of water supply and provided with sufficient number of hose outlets and hose located as hereinafter set forth, to make possible the covering of every portion of each floor area with a standpipe hose stream, except that where the first story or basement or both are occupied as stores without connection or communication with the entrance hall or stair enclosure to upper stories, the Fire Commissioner may permit the omission of standpipe protection in such stores and, if so omitted, may prescribe such portable protection as he may deem necessary. Cellars, sub-cellars, basements, etc., shall be protected in the same manner as the stories above.

Every standpipe (fire line) equipment shall be a Standard Wet System, except as hereinafter provided for:

(a) In any building not exceeding 40 feet in height, and 20,000 sq. ft. in area, a four-inch street supply system having one four (4) inch direct connection to a street main fed two ways or having one 4-in. direct connection to each of the two street mains on two street fronts, each main so fed that the shutting off of one main will not interfere with the supply of the other main, may be installed, provided there is a sufficient pressure in the street main or mains to maintain a minimum of

(*Continued on page* 965)

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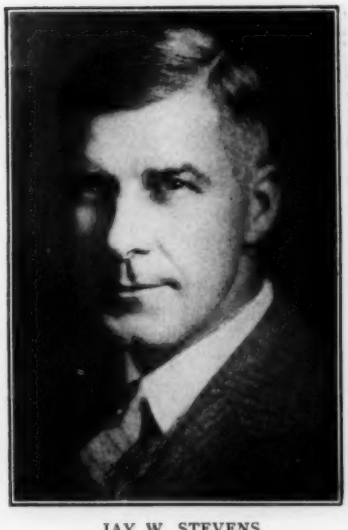

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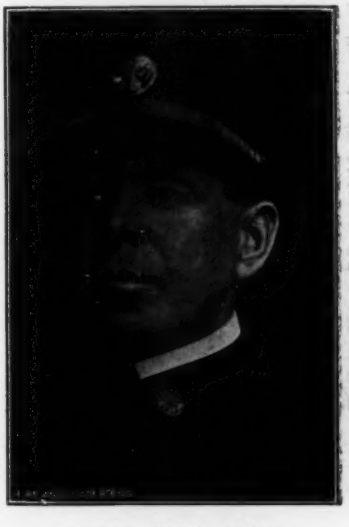

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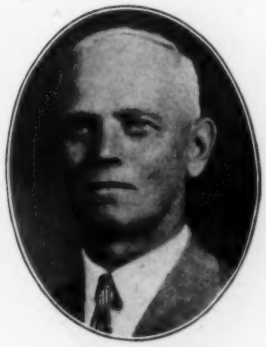

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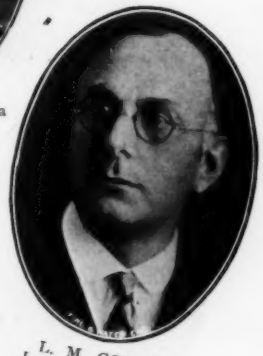

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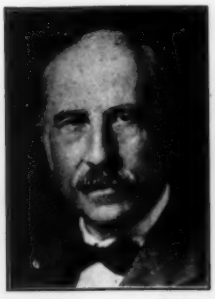

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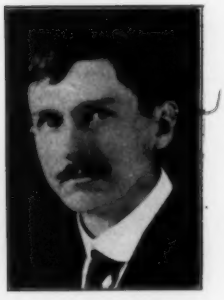

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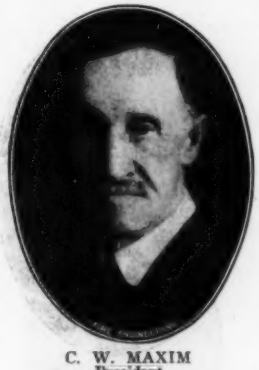

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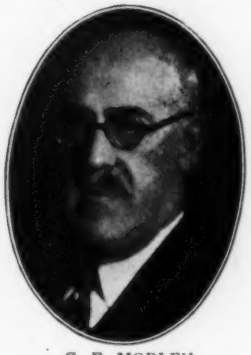

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FIRE DEPARTMENT EQUIPMENT MANUFACTURERS AND REPRESENTATIVES

History of Fire Fighting

(*Continued from page* 936)

The buildings in ancient Rome were very high, the upper stories were mostly of wood, and the streets and lanes were extremely narrow, hence the suppression of conflagrations there must have been an arduous business, and one that required extraordinary daring and skill; qualifications that could only be obtained by experience. Besides engines for throwing water, the firemen used sponges or mops fixed to the end of long poles, and they had grapples (a type of pompier ladder) and other instruments by means of which they could go from one wall to another.

Bought Houses on Fire

Rome had a great number of fires around this time, and as every calamity that befalls mankind is converted by some men to their own advantage, so the numerous fires in Rome led to the practice of speculating on the distresses they occasioned. Thus Crassus, the consul, who, from his wealth was surnamed the Rich, gleaned his immense fortune, "from war and from fires; he made it a part of his business to buy houses that were on fire, and others that joined upon them, which he commonly got at a low price on account of the fear and distress of the owners about the event."

Unfortunately, history does not tell us just what he did with the burning houses after he bought them, but it leads us to the conclusion that he must have had his own fire brigade which set promptly to work to put the fires out and thereby accomplish the largest possible salvage.

(*To be continued*)

New Standpipe Rules for New York

(*Continued from page* 946)

twenty-five (25) pounds per square inch static pressure at the highest hose outlet.

Evidence establishing the fact that water main conditions and pressures are as required shall be submitted to the Fire Department.

RULE 10. CLASSIFICATION OF STANDPIPE-FIRE LINE EQUIPMENTS.—For the purpose of these rules standpipe equipments shall be classified as:

(a) Standard Wet System in which the pipes are of sizes as specified in Section 581 of the Building Code, and in which the system is at all times filled with water from at least one standard source of supply.

(b) Four-inch street connection system, in which the pipes are of sizes as specified in Section 581 of the Building Code and the system is at all times filled with water from one or more 4-in. diameter direct connections to public water mains in the street.

(c) Automatic dry systems, in which the pipes are of sizes as specified in Section 581 of the Building Code, and are normally dry, the system being connected to a source of water supply controlled by an automatic dry pipe valve as defined elsewhere in these rules.

RULE 11. TANKS ABOVE ROOF.—Construction shall be as per Section 428 of the Building Code and tank structure and supports shall be approved by the Superintendent of Buildings. The covers of all unenclosed standpipe tanks shall be conical in shape and protected with a type of roofing approved by the Superintendent of Buildings.

RULE 12. RESERVE FOR STANDPIPE.—Gravity roof tanks, except as otherwise required by Rule 83, shall contain not less than 3,500 gallons of water at all times, reserved solely for standpipe fire line purposes.

When a gravity tank is to be used for both standpipe and house supply, the connection for the latter shall be made through the side of the tank above the level of the required standpipe reserve. This type of house and standpipe supply tank is preferred and recommended.

When two gravity tanks are used, one for standpipe fire line service and the other for the house supply, the house supply tank may be so arranged that it can only be filled by an overflow from the tank used for standpipe fire line purposes.

RULE 13. STANDPIPE AND SPRINKLER SUPPLIES.—Standpipe and sprinkler supply shall not be taken from one tank unless there is available 5,000 gallons of water for the standpipe system which shall be in excess of the amount of water required for the sprinkler system. Standpipe supply shall be taken from the uppermost portion, and through the side of the tank, or through the bottom, provided that portion of the pipe within the tank is of brass or other non-corroding material.

RULE 14. BUILDING IN GROUP UNDER THE SAME OWNERSHIP AND OPERATION.—One gravity tank of at least 5,000 gallons water capacity to supply the largest unit of a group of separate and distinct buildings operating under one ownership, and located

(*To be continued*)

Value of Foam in Large Oil Fire

(*Continued from page* 944)

wire and drawn along the surface of the oil from tank shell to tank shell. The fire was allowed to burn ten minutes before the generators were started. A very hot fire ensued.

The equipment used to combat this test fire consisted of two Foamite Generators, operating simultaneously and discharging foam through two delivery chambers. The level of the oil in the tank was low and the foam fell through 20 feet of heat and flames. Twelve minutes after the generators were started the fire was under control but still burning in one sector along the tank shell and half way between the two chambers. Twenty-one minutes after the generators were started the fire was completely extinguished. The entire contents of Bins Nos. 1 and 3 and a part of the powder in Bin No. 2, a total of 23,750 lbs., were required to complete the extinguishment.

The following day the test was repeated by igniting the residual oil in the tank. In this instance the foam was delivered through two swing pipes with outlets elevated 12" above the oil surface in the tank. The fire was combatted with two Foamite Generators discharging through the two swing pipes. Five minutes after the generators were started the fire was under control. Fifteen minutes after the generators were started it was completely extinguished with a total of 12,500 lbs. of generator powder.

A brief summary of the results of the two tests follows:

	Test No. 1	Test No. 2
Amount of oil in tank	990 bbls.	743 bbls.
Fire completely out	21 min.	15 min.
Water consumed	12,600 gals.	7,900 gals.
Powder consumed	23,500 lbs.	12,500 lbs.
Maximum height of flames	162 feet	156 feet
Gallons of water per minute per generator	333	334
Lbs. of powder per minute per generator	627	520

Important conclusions were drawn from these tests. These were—

First: That two Model 30 Foamite Generators, operated simultaneously, can successfully combat a fire in a 93′ diam. tank under extremely severe conditions.

Second: That Three Model 30 Generators should be provided for tanks larger than 93′ and not over 117′ 6″ in diameter.

Third: That the swing pipe method of introducing foam is more efficient than the delivery chamber—float deflector method.

Fourth: That the control valves governing the flow of foam to swing pipes or delivery chambers should be located a safe distance from the tank shell (at least 75′ and preferably beyond the firewall area), to insure their being accessible in an emergency.

Fifth: That for the protection of any given property, sufficient powder should be kept in storage to provide a minimum of five pounds of powder per sq. ft. of free oil surface, based on the largest diameter tank included in the risk.

Kohler Co. Makes Flood Lights

The Kohler Company, better known for their plumbing fixtures, are manufacturing portable electric plants such as are mounted on fire apparatus to operate flood lighting systems. Such units are installed on apparatus in Baltimore, Boston, Portland, Ore. San Francisco, Trenton, N. J., and other cities.

The flood light systems make it possible for firemen to work with safety at night fires. The plants generate 110 volt current permitting standard lamps and enabling the current to be supplied through long cables without much loss in voltage.

Philadelphia's Modern Fire Department

(Continued from page 924)

large electric bell known as the "gong." All box alarms are first sent on the joker circuits and then on the alarm circuits.

High Pressure

Nearly all disastrous fires which have taken place in this and other countries have been the result of an inadequate supply of water with which to fight them.

While Philadelphia is surrounded by an abundance of water, means of concentrating it for fire purposes was a problem until the advent of the "High Pressure" system in 1902. Those charged with the responsibility of protecting life and property in our crowded city received a valuable ally when the "High Pressure" system, whose sole aim is for fire extinguishing, was installed.

The Philadelphia High Pressure System today consists essentially of two pumping stations with 56.69 miles

Fire Station and Storage No. 44, at 3240 Haverford Avenue, Philadelphia

of cast iron pipe and 966 high pressure fire hydrants, with the necessary stop valves on mains and hydrants. The system is divided into two parts, one part covering the central portion of the city and is supplied through 21.69 miles of mains and 377 fire hydrants.

The other part covers the northeast section of the city (known as the mill district) and is supplied by the Fairhill pumping station through 35 miles of mains and 609 fire hydrants. In case of emergency, as in the event of two or more large simultaneous fires in one district, both stations can supply water to this district.

The Race Street pumping station is equipped with seven triplex double-acting pumps with a rate capacity of 1,200 gallons per minute, each under a pressure of 300 pounds, and two triplex double acting pumps of 350 gallons per minute, under the same pressure. The large pumps are driven by three cylinder gas engines of 300 b.h.p. each, and the small pumps by three cylinder gas engines of 125 b.h.p. each. Total capacity of station, 9,100 gallons per minute.

The Fairhill pumping station is equipped with ten large and one small pump of the same design as the Race Street station, driven by gas engines equipped similiar to those at the Race Street station, with a total capacity of 12,350 gallons per minute.

The stations can be operated separately or collectively by opening of stops, one located at New Market Street and Fairmount Avenue and the other on Broad and Spring Garden Streets. Total capacity of both stations, 21,450 gallons per minute.

Early History of Fire Department

Even in the earliest times in Philadelphia the necessity for some kind of fire protection developed crude instruments. In recent years there has been a great awakening and methods of attack have become much more scientific. That this advance has been gradual, however, is indicated by the following historical data:

1696 — As early as 1696 we find records of fire prevention laws having been passed in Pennsylvania. In this year the Assembly provided that "no person shall presume to smoke tobacco in the streets, either by day or night." A fine of 12 pence was collected for each offense, and the money was applied to the purchase of "leather buckets and other instruments or engines against fires." House owners were compelled "to keep chimneys clean by help of chimney sweeps." They were not allowed to burn them out, as soot might blaze and cause fire.

1697 — After several fires in 1697, a law was passed requiring each householder, under penalty of fine, to keep a swab, twelve or fourteen feet long, and also two leather buckets, to be ready in case of accident or fire. In case of fire, all buckets were to be thrown out of windows and collected at the nearest pump. Bucket brigades, each with six or eight good hooks for the purpose of tearing down houses in case of fire, were provided at public expense.

1700 — No person was allowed to keep more than six pounds of gunpowder in any building, unless forty perches from other buildings. Hay and reed stacks were not permitted near dwellings. At this time, also, bonfires were prohibited.

1710 — Fireworks were prohibited for the first time.

1718 — The number of "public pumps" was increased. Fire engines were bought for fifty pounds each, and paid for by Council out of chimney money. In this year Abraham Bickley sold a fire engine to the city for fifty pounds, which was used until 1831.

1730 — In this year the most serious fire up to this time occurred. The damage was 5,000 pounds ($25,000). Improvements in the fire fighting service and a better enforcement of regulations followed. Councils ordered three fire engines and twelve hundred leather buckets from England, and also bought two hundred American-made buckets, twenty ladders, twenty-five hooks and a number of axes. A property tax of two pence per pound, and a per capita tax of eight shillings was levied to meet the expense. A man was appointed to look after each engine. These were sheltered in temporary sheds, church-yards, etc.

1733 — In this year the first fire engine was built in Philadelphia, and was furnished by Nathaniel Nicholls. About this time there was much agitation for an organized volunteer fire brigade. Benjamin Franklin was one of the leaders of this movement.

1736 — The "Union Fire Company," with a membership limited to thirty, was organized on December 7, 1736.

1738 — The second company was organized in this year.

1742 — "The Fellowship" Company was organized in 1742.

1743 — The "Hand in Hand" company was organized. Also the "Heart in Hand" company was organized February 22, 1743.

1747 — The "Friendship" fire company was organized July 30, 1747.

1750 — The "Britannia" fire company was organized, and seems to have existed until the revolution. These companies were added as follows:

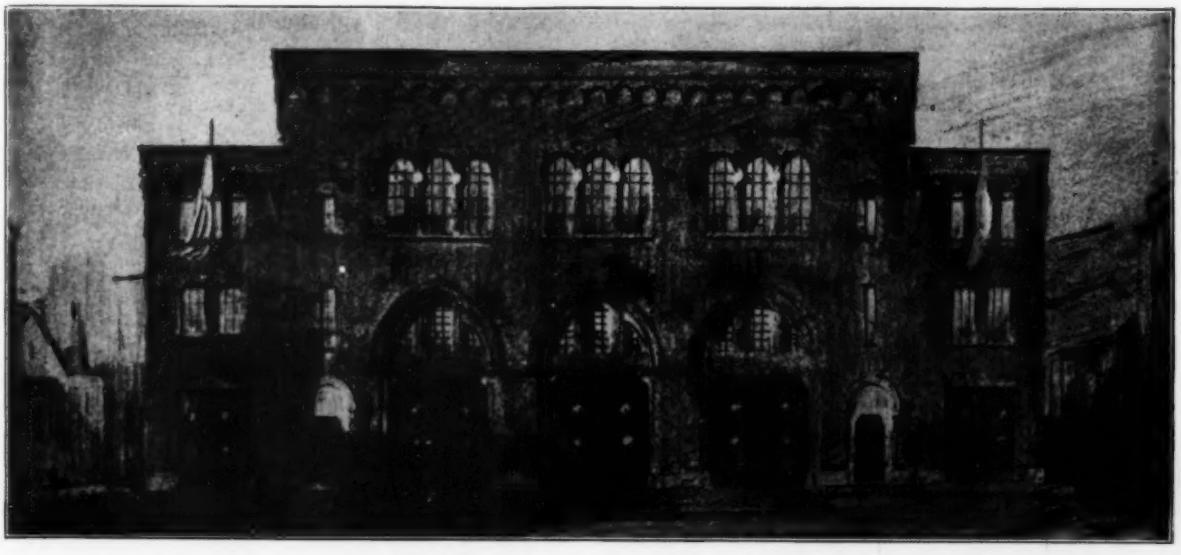
1752 — "Hibernia," at the corner of Second and Walnut streets, February 20.

1756 — "Northern Liberties," northeast corner Cable Line and Callowhill streets, May 1, 1756.

1760 — "Vigilant," east side of Second Street below Vine, January 2, 1760.

1761 — "King George III," afterwards the "Delaware," on Water Street below Arch, March 21, 1761.

1764 — "Queen Charlotte," afterwards the "Fame," north side of Cherry Street, east of Fourth, March 29, 1764, also the "American," was organized. In January the citizens of Germantown perceived the necessity of fire protection and organized three companies, called the Fellowship of the upper ward, the Fellowship of the middle ward, and the Fellowship of the lower ward. These names were afterwards changed, as follows: That



The New Fire Headquarters of Philadelphia

of the upper ward, instituted March 1, 1764, was named the Franklin Fire Company; that of the middle ward, instituted March 5, 1764, was called the Washington Fire Company, while that of the lower ward, which was instituted on February 28, 1764, was called Columbia Fire Company.

1765 — The "Sun" and "Crown" and "Beaver" were organized.

1769 — The "Cordwainers"; March 1, the "New Market," at north side of Market between Second and Pine streets.

1774 — The 'Neptune," Race Street below Third, January 17, 1774.

1788 — Uniforms were suggested at a Firemen's convention.

1800 — In this year four fire engines were built, and fire-escapes were first used in Philadelphia.

1803 — In 1803, water from the Schuylkill River was introduced in "trunks" in streets. The Philadelphia Hose Company was formed. A hose carriage with leather hose was put in service.

The Union Fire Company

Benjamin Franklin, like the practical philosopher he was, had the problem of fire-fighting among his many thoughts as a public servant. His interest in the subject led to the founding of the Union Fire Company in 1736, of which he was the leading member. Each man furnished, at his own expense, six leather buckets and two stout linen bags, which he was supposed to bring to a fire. The buckets were for the purpose of throwing water on the flames, and the bags were intended to be used as receptacles for salvage. The members had an agreement to attend any place from which an alarm came with their outfit.

Quite a degree of organization obtained in this early fire department, for regular assignments were given each member, such as watching burning houses against theft and looking after the details of good service to prevent confusion, etc. Lights were placed in the windows of those members whose houses were near the scene of the blaze, in order to render assistance to the others who were running up.

Thirty members composed the organization which held eight annual meetings. This plan was adopted by all the fire companies in the city, and used with modifications, until the Revolutionary War was long a thing of the past. Franklins' company existed for more than eighty years.

Early Volunteer Department Deteriorates

The earliest organizations were composed of professional men, house owners and men of position. However, about 1838, bands of ruffians began to organize fire companies. They kindled fires for the fun of putting them out. Companies fought for the honor of being the first to get their engines to the fire. They also fought for rewards. Riots and murders were frequent on the fire ground. Firemen were called volunteer "Jaceys." They ran recklessly in the street at night and often just for amusement.

Fires were of nightly occurrence. Gaudy processions and parties were frequent. Streets were noisy at night with engines, and crowds of men and boys. Some companies blackmailed the community to buy them uniforms and to pay the cost of repairing apparatus. There was a general fear of firemen, and even politicians were subservient to them. The conditions finally came to the attention of the State Legislature, and in March, 1848, an act was passed for the better regulation of fire departments.

New companies were to be created only with the approval of the Court of Quarter Sessions. Cities and districts were required under this act to maintain and ring bells; rioting was to be severely punished.

First Steam Fire Engine

In 1855, "Young America," a steam fire engine, was bought for $9,500 by a number of citizens. It weighed 20,000 pounds and could be drawn to fires only with the greatest difficulty. It was constantly breaking down, and it has been stated that for the three years during which an attempt was made to keep this engine in the service, the cost was $20,000.

Volunteer companies opposed the change from hand to steam engines, because they believed that the innovation would reduce the number of firemen. However, from this time on, hand engines gradually disappeared, and conditions improved, and by 1860 there were 27 steam engines, 47 hand engines, 114 hose carriages, 76,338 feet of hose, 1,595 feet of ladders. The personnel consisted of about 3,000 men, organized into ninety companies.

Paid Department Is Organized

With the advance of civic progress and in order to be in step with the other large cities the organizations, for the sake of efficiency were to be disbanded in 1871 and the paid fire department became a reality. This was the beginning of the centralization of responsibility for fire protection. The department was under the direction of seven commissioners who were appointed by councils.

The department as then organized consisted of: one chief engineer, five assistant engineers, 27 foremen, 22 steam engineers, 22 firemen, 27 drivers, five tillermen and 226 hose- and laddermen; total fire fighting force, 335; one secretary and one messenger. Total membership of department, 337. They were divided into 22 engine companies and five truck companies.

By 1891 the bureau consisted of one chief engineer, eight assistant engineers, 44 foremen, 37 steam engineers, 37 firemen, 53 drivers, six tillermen and 343 hose or laddermen, arranged into 37 engine companies, six truck companies and one chemical company. The apparatus consisted of 40 steam engines, 41 hose carts, 12 trucks and two chemical engines; 80,000 feet of hose was on hand.

In 1900 the composition of the bureau was: one chief engineer, one assistant chief engineer, nine assistant engineers, 64 foremen, 64 assistant foremen, 79 drivers, 52 firemen, 494 hose or laddermen. Total fire fighting force 828; arranged into 48 engine companies, five chemical companies, one fire boat, one water tower and 9 truck companies.

In 1910 the composition of the bureau was: one chief engineer, one assistant chief engineer, ten assistant engineers, 72 foremen, 75 assistant foremen, 57 enginemen, 59 firemen, 91

drivers, 17 tillermen, 573 hose or laddermen. Total fire fighting force 956; distributed into 55 engine companies, seven chemical companies, one pipe line, one fire boat, one water tower, one hospital detail and 15 truck companies.

On May 1, 1918, the two-platoon system was placed in operation.

STUCCO PREVENTS SPREAD OF FIRE TO FRAME STRUCTURE

Two Instances of Fire Confined to Building of Origin by the Material on Wire Mesh—Use of This Combination in Interiors

IN two specific instances in recent fires the use of stucco on a metal lath basis proved of advantage in confining the blaze to the building of origin. These fires occurred respectively at Revere Beach, Mass. (See Fig. 1), and at Minneapolis, Minn. (See Fig. 2).

A fire of large proportions gutted the combustible interior of the Nautical Gardens Ball Room and Pit, an amusement struc-

Fig. 2—Ruins of a Stucco Veneered Workshop at Minneapolis

Reinforced Stucco Walls Prevented the Spread of the Fire to a Frame Structure Twenty Feet Away.

ture located in Revere Beach. The exterior walls of the building were constructed of stucco on expanded metal reinforcing. The behavior of these walls throughout the fire is best explained in the comment by Thomas J. McCarrick, Chief of Revere, Mass.

Fig. 1—Fire in the Nautical Gardens Ball Room and Pit, at Revere, Mass.

He says, "The stucco held the fire within the building remarkably well * * * causing no great damage from falling walls."

In Minneapolis, a stucco veneered work-shop burned; the metal lath and stucco walls confined the fire to such extent that another building of frame construction twenty feet away was untouched. The interior of this stucco building was entirely destroyed by the fire.

The lesson to be derived from such fires as described is twofold. First, stucco on metal lath will provide adequate fire protection. The second lesson is to be found in the fact that similar fire resistant material can be used in parts of the interior of buildings, which will, at least, keep the fire confined to the spot where it starts, until the arrival of the fire department, and will prevent its rapid spread to adjacent inflammable material.

Chaplain Writes Fire Fighters' Praise

At the forty-ninth annual convention of the Massachusetts State Firemen's Association in Haverhill, Mass., Rev. Harry ElMore Hurd, pastor of the Center Congregational Church there, read a poem "Our Fire Fighters." The author has granted special permission to FIRE ENGINEERING for the reproduction of this poem.

The city streets are deserted and still,
The curtains of peaceful night are drawn,
And the flaming stars wheel towards the dawn
While mothers rock their babes to sleep,
Asking the Shepherd to watch their sheep——
High on His golden-lighted sill
The Lord looks down and hears their call,
Answering kindly, "Sweet child sleep,
My Fighters of Flame shall guard you all."

The caverous city streets are still
But a demon stalks beneath the night
Torching the world with red delight
While dreaming children toss in their sleep,
Trusting the vigil that brave men keep
Until the thrilling siren's shrill
Calls them to answer the midnight blast,
Arousing men from their troubled sleep
As the lurching trucks go clanging past.

The city streets are no longer still,
Lean ladders are lifted in answer to prayers
And brave men grope up the sagging stairs,
Chopping and coughing, crawling through——
Great God, save the men who wear the blue,
For hearts shall be heavy and tidings ill
If they fail to reach the babes who sleep——
Ah, tradition is strong, and men are true,
So the fight is won, though the joyful weep.

ENVOY

May God in Heaven guard them all
Who live with zest and die with a will
Whenever the whining whistles call,
Flinging themselves at the Burning Shame
And laughing it off like a pleasant game.

Mr. Hurd served as chaplain of the 33rd U. S. Engineers in France and is the author of the books "Possessions of a Sky Pilot," and "Mountains and Mole Hills."

HARRY BELKNAP.

Service When It Was Needed

A delivery engineer employed by the W. S. Nott Company had an interesting experience as he was driving a machine to the point where it was to be delivered.

At a point in the road he saw a Chevrolet truck loaded with poultry, and the driver frantically trying to extinguish a fire underneath the hood of the truck. He tried to put the fire out with sand and gravel but was not successful.

The fire apparatus was one fitted with a chemical tank and booster arrangement. It was not difficult to extinguish the gasoline fire with a stream supplied by the booster tank. It seemed as though the small stream of water under high pressure, blew the fire out.

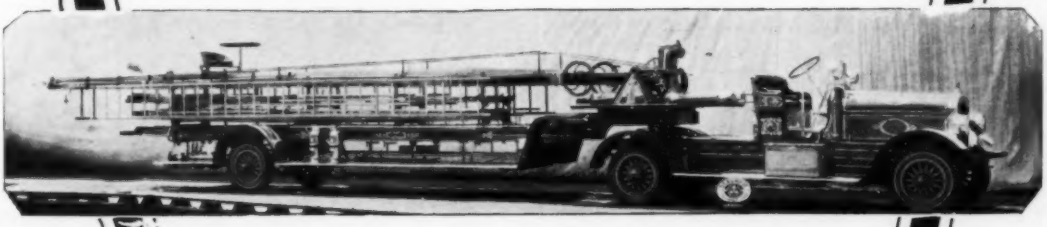
Hartland, N. Y., Considers Fire Plans—A meeting has been held in Hartland, N. Y., to consider the matter of fire protection.

Oppose Consolidation of Stations—Considerable opposition has developed in Omaha, Neb., against the consolidation of stations No. 3 and 4.

Connellsville, Pa., to Vote on Station—At the November election, Connellsville, Pa., will vote on the plan to erect a central fire station for $50,000.

More Men Urged for Providence, R. I.—Appointment of twenty-four additional men in Providence, R. I., and the purchase of a 750-gallon pumper has been urged at a meeting of the city council.

Lighter, yet..



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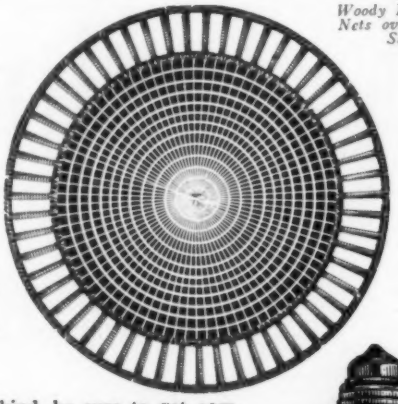

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1305 Pine St. St. Louis, Mo.

Chemical Engineering Experts

Civil Service in the Fire Service

(*Continued from page 926*)

made on these same standards. Mental fitness is determined by the record of the man in the department.

In St. Louis the Efficiency Board conducts the civil service examination for the position of private, which is the entrance grade in the fire department.

The efficiency rating of an employee is the determining factor for his promotion to lieutenant or captain. All employees in the classified service are rated by the appointing officer semi-annually and when an employee is to be promoted from private to lieutenant, his rating for that period is taken into consideration. The same applies for promotion from lieutenant to captain. The position of deputy chief and district chief are exempt; that is, they are not in the classified service.

The examinations are held yearly; unless there is a very large eligible list, when the board sometimes renews it for another year.

In Detroit the civil service law states:

"Promotions in the fire department shall be based upon the length of service therein. The officer or employee thereof having served the longest period in any position shall be advanced to fill any vacancy in the next higher position, if he shall have the qualifications therefor."

At South Bend, Indiana, the length of service and the efficiency of the man are the factors considered in promotion.

On the other hand, at Hartford, Connecticut, all members of the department must pass the prescribed course at the department drill school. Engineers are examined in a practical and mental test for promotion.

At Berkeley, California, promotions are made upon recommendation of the fire chief following review of performance records of the men as follows:

Seniority is disregarded except that for promotion to the rank of lieutenant, five years service in the department is required; for promotion to the rank of captain, five years service as a lieutenant is required (in exceptional cases this minimum may be reduced to three years). For promotion to rank above that of captain, previous service as a captain is required.

At intervals throughout the year, the fire chief holds formal written examinations on subjects related to the practical activities and operations of the department, grading the men on a scale of 100. Also, and independent of the foregoing, the fire chief rates the men according to the scheme used in the army considering such qualities as leadership, personality, physique, skill, general value to the service, etc. This rating is also on a scale of 100. The intelligence rating being on a scale of 100, a composite score is secured by averaging the three separate ratings, with these qualifications: No person of less than average intelligence, or whose rating on the other two scales is less than 65 is considered eligible for promotion. Moreover, as would be expected, no man is promoted unless he is in sound physical condition.

No political consideration or outside influence is permitted to dictate the acceptance, rejection or promotion of any candidate. The chief of the fire department and the chief of the police department are designated as examiners for their respective departments and appoitnments are made by the city manager upon their recommendation.

Preparation of Promotional Examinations

With the exception of Massachusetts and New Jersey, the task of selecting the questions to be used in promotional examinations falls upon the municipal civil service commission. This commission may call in outside aid, or it may, with the co-operation of the fire chief, prepare its own questions. But in either case it is responsible for the examinations as presented.

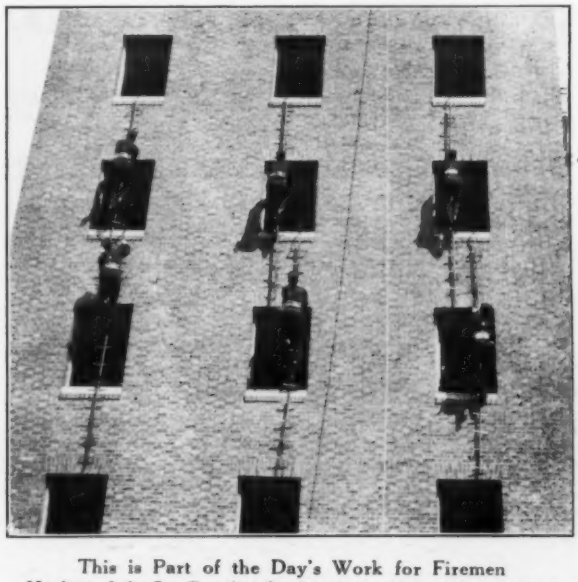
A large number of municipal civil service commissions have taken advantage of the service rendered by the Bureau of Public Personnel Administration, Washington, D. C., which organization has conducted a very extensive study of the subject of fire department promotional examinations, and which submits questions for use in the various cities. This organization has done a great deal to develop the "short answer" type of question and with its wide activity in other lines of civil service, it has brought into play its accumulated experience in the preparation of fire department promotional examination questions.

Insofar as the cities in Massachusetts are concerned, under the law all cities in that state make appointments and promotions in their fire departments as a results of civil service examinations. The towns have the option of accepting the civil service law if they wish. Most of the larger towns in the state have accepted the law.

As shown in the list herewith, practically all of the prominent cities and towns hold examinations for promotion in their fire department. The state civil service commission prepares all questions and establishes lists as a result of the examination.

Their general rule is to hold examinations every two years for the larger cities. Since the lists run for two years, this custom results in having a list continuously. In the smaller cities and towns where vacancies are rather infrequent, examinations are held only when vacancies arise.

The New Jersey State Civil Service Commission acts as a personnel agency for the state service and also for each city and county service when and as such cities and counties adopt the provisions of the civil service laws by referendum vote at a general election. The state commission is the only civil service commission in the state or in any of its subordinate jurisdictions. The following counties and cities have



This is Part of the Day's Work for Firemen

Members of the San Francisco fire department think nothing of this feat that is considered spectacular to the layman. It is part of the course at the department's training school. Each fireman must pass a strenuous test at this school before being admitted to the department.

from time to time adopted the provisions of the civil service law and the New Jersey Commission is now serving each of these local governments in the same way as though it were the local municipal commission: Essex County, Newark, Newark Board of Education, East Orange, South Orange, Hudson County, Jersey City, Passaic County, Paterson, Bergen County, Union County, Elizabeth, Mercer County, Trenton, Camden.

All of the cities listed below have regularly organized fire departments, and each member of the uniformed department is subject to civil service examination. The ranks in the several departments are:

Newark: Fireman, captain, battalion chief, deputy chief, chief; East Orange: Fireman, lieutenant, captain, assistant chief, chief; Jersey City: Fireman, captain, battalion chief, deputy chief, chief; Camden: Fireman, junior captain, senior captain, batallion chief, deputy chief, chief; Trenton: Fireman, lieutenant, captain, assistant chief, chief; Elizabeth: Fireman, lieutenant, captain, battalion chief, deputy chief, chief; Paterson: Fireman, captain, battalion chief, deputy chief, chief; South Orange: Fireman, chief.

Eligible lists are established for a period of two years only and at intervals of approximately two years new lists are established in the several jurisdictions. The New Jersey Commission uses in promotion examinations free answer questions, false and true and multiple statement questions. It has not used the Army Alpha tests. The newer forms of questions are used rather sparingly, and as additional opportunity is offered to test out and develop proper tests for promotional examinations, they will probably be used on a larger scale.

Types of Questions

The type of examination question used almost entirely until the development of the "short answer" form, was the so-called "free answer" question. In answering such a question the candidate had a great deal of latitude. This very condition made it extremely hard to give a man just what he was entitled to. Where there were a great number of candidates taking the examination, it was an impossibility to accurately place the various candidates at the exact positions they deserve on the list. For example, a question would be asked as follows:

Question: State how you would get into the attic or cockloft of a business block that had a great deal of smoke just under the roof, and what use would you make of a chemical stream?

This question may be answered in several different ways, or in one general way with several deviations from uniformity. Evidentally, it would be impossible to give each man just what he deserved for his answer, where the answers differed.

Then there is the type of question which asks the candidate how he would fight a specified type of fire, with the conditions surrounding the fire outlined in the question. Again, a candidate would see fit to transmit a first, second, or a third alarm. Under assumptions which he must necessarily make, he might be entirely justified in the actions he has taken at the fire. Thus if one candidate sent in second alarm and another sent in a third alarm, and each made assumptions to fit the case, each might receive the same rating, when other conditions were equal. This situation naturally added tremendously to the difficulties encountered by the examiner and made more remote the chance of giving each man what he deserved.

Other "free answer" types of questions include those relating to the use of appliances, hazards of certain operations at fires, hazards of materials such as chemicals, gases at fires, etc. Almost invariably there were more than one correct answer. Below are given several free answer type of questions taken from recent civil service examinations. They are typical, and will give the reader an idea of this class of question.

Question: What would you recommend to the owners of buildings which have sprinkler systems for the care of same in order to have them serviceable?

Question: A bad fire occurs in an office building 11 stories high of modern construction. The 4th, 5th, 6th and 7th floors are completely destroyed. You are detailed to take charge of a company and overhaul the contents of the burned floors. State exactly how you would proceed. What dangers are to be guarded against? What precautions would you exercise?

Question: How would you handle a fire in a lithographing and printing establishment?

Question: A fire in the hold of a seagoing vessel that carries general cargo. How would you handle it?

Question: Fire in a large closet on the second floor of a three-story frame house containing a large amount of clothing. The house is filled with smoke. You have a combination truck and one engine company. How would you handle the situation?

Question: Assume a fire involving the third and fourth floors in a wood working factory, five stories high of second-class construction. There is a stairway in front and a fire escape. Stairway and freight elevator in the rear. You are the first officer to arrive and are in command 10 minutes. You have three engine companies and two ladder companies.

Question: A building 50x125 feet, one story high, with different stores located in it and partitioned off. Fire starts in the cellar of dry goods store and communicates to cellar adjoining drug store. You are in charge for 10 minutes. State in detail what you would do.

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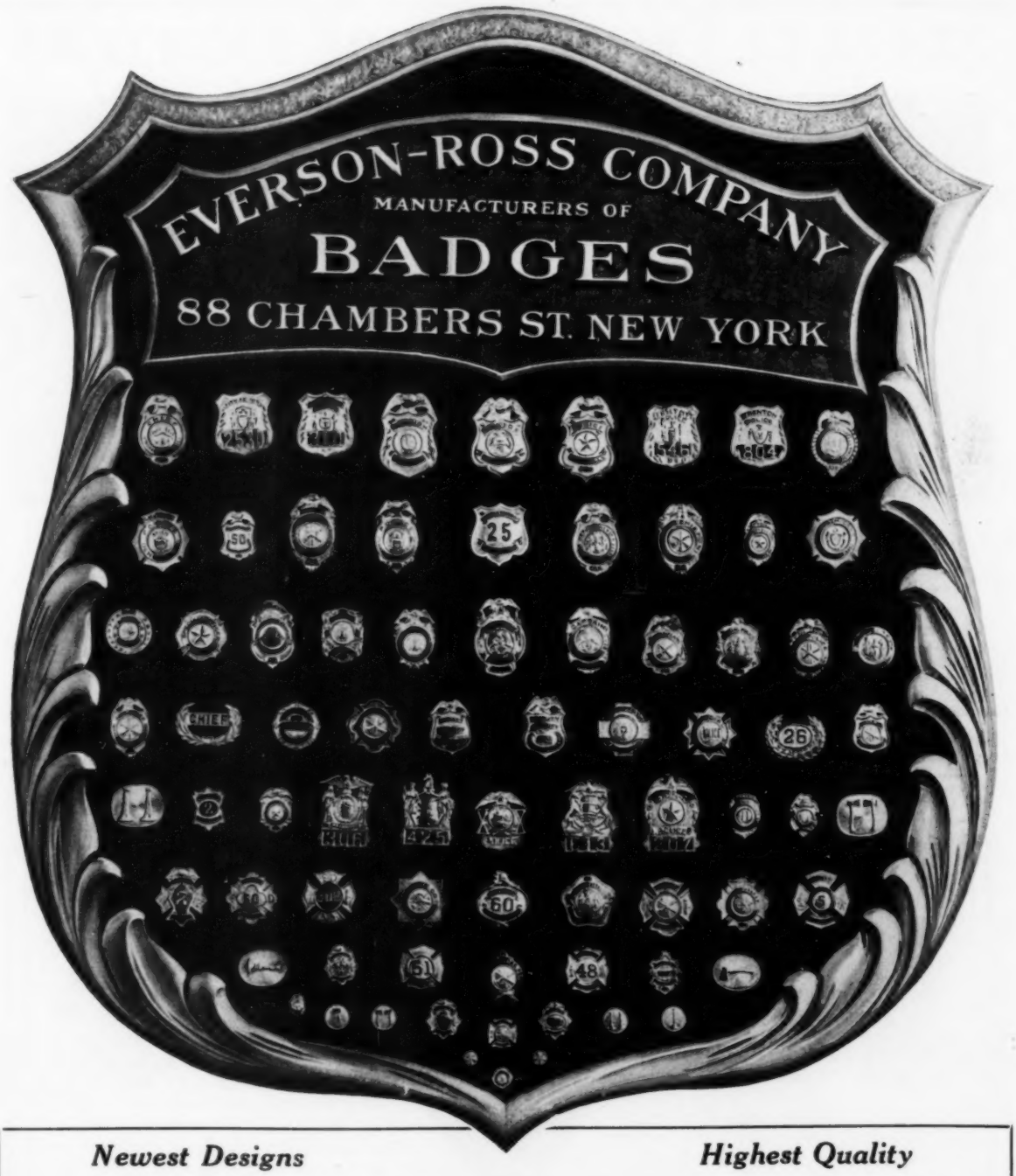

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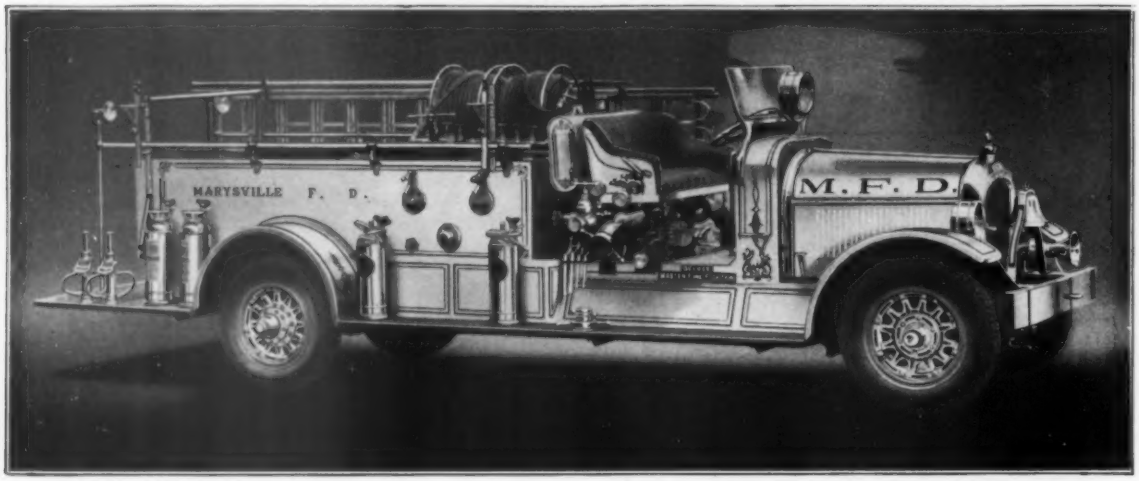

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Question: (a) You respond to a still alarm of fire as a lieutenant in charge of an engine company to a 5 and 10 cent store during business hours. The fire has complete control of the basement. There is a stairway 50 feet back from the door, leading to the basement. What would be your procedure in fighting this fire?

(b) In fighting the above fire is it good practice to break the show windows on the street floor to enable the people inside the store to escape by way of the said show windows?

The "short answer" form of question may be divided into three general classifications: "false and true," "multiple choice statement," and "completion statement." There are several variations in each classification, but the results are precisely the same—the candidate in answering the question has but one correct answer to give, and when his papers are completed they can be quickly compared with a stencil which shows the right answer; and from the comparison his rating can quickly be determined.

The short answer form of question is a comparatively recent development. Personnel administrators have been aware of the limitations of free answer questions, and have recognized that the type of men to whom fire fighting work appeals are not as a rule skilled in expressing themselves in writing, even though they may be competent in fighting fires. The task of developing tests which would show a man's judgment and ability, without imposing upon him the task of writing out a long story, was thereupon taken up. While considerable experimental work remains to be done, the tests developed on the basis of short answer questions have reached a stage where it is felt they are worth submitting to civil service commissions for general use.

Specimens of Short Answer Questions

Below are given several questions based on the short answer form; they include the various types now generally employed. The ability of an officer to handle a fire is indicated by an adaptation of the short answer type of question to a specific fire layout, as is shown by some of the questions below.

True and False Questions

1. TRUE, FALSE. Smoking in street cars by members in uniform is forbidden.

2. TRUE, FALSE. All uniformed members of the department are required to wear their regulation uniform when appearing before the Board.

3. TRUE, FALSE. Substitutes when on for officers shall take the watch of officer for whom they are working.

4. TRUE, FALSE. A large diameter nozzle always gives a greater range of stream than a small one.

5. TRUE, FALSE. Water towers are always used at high fires.

In answering this type of question, the candidate is required only to encircle the word TRUE or the word FALSE, depending upon whether or not the statement is true or false. If the candidate understands his subject, he can quickly show his knowledge by this simple process, instead of having to write out a long statement which might, or might not, completely express his ideas.

To avoid guesswork, some commissions impose a penalty of one additional answer for each one that is given incorrectly. For instance, suppose one of the statements was answered incorrectly. Then instead of having the credit for one answer deducted, the candidate would lose in addition to this the credit for a second answer. In this way the student is discouraged from doing any guessing.

To determine the candidate's ability and knowledge in fire fighting, another type of question has been developed, based upon the false and true principle, which seems to answer the purpose very well. Such a question is given below:

Question: A fire occurs at 8 a. m. in the shingle roof of a 1½ story frame dwelling. You are the first officer to arrive and remain in charge. When you arrive the fire has consumed an area of about 30 square feet and is spreading. Underline the word TRUE opposite each of the following actions that you should take at this fire. Underline the word FALSE opposite each action you should not take.

1. TRUE, FALSE. Send in a second alarm immediately.

2. TRUE, FALSE. Use wooden house ladders to carry chemical stream and fire extinguishers to roof.

3. TRUE, FALSE. Direct two engine companies, of the first alarm assignment, to each stretch in a large line to burning building.

4. TRUE, FALSE. Direct the first stream to seat of fire from sidewalk.

5. TRUE, FALSE. Throw the second stream from adjoining roof to seat of fire.

6. TRUE, FALSE. Direct truck company to chop out burning shingles and place them on adjoining roof.

7. TRUE, FALSE. Direct chemical company to dump both tanks and take line over department ladder to roof and to seat of fire.

Notice that in the above type of question the candidate has an opportunity of displaying his judgment and knowledge of fire fighting. This type of question has been developed to involve larger fires—that is, multiple area units, as would be required in examinations for promotion to higher ranks in the department.

Multiple Choice Statements

In this type of question, which is coming into general use, a statement is made which is completed in one of four supplementary statements. The candidate is required to check the supplementary statement which comes nearest to being correct, or which is the best answer of the four given.

For example, note the following:

Question: The company commander first to arrive at the box when a false alarm has been turned in should:

—immediately try to determine the cause of the alarm.

—return to quarters with his company and report to headquarters that the alarm was false.

—return to quarters with his company and report the case to the police department.

—return to quarters with his company and detail one of his men to try to find out the cause of the alarm.

A second example follows:

Question: If a situation arises in the line of duty of a fire lieutenant which is not covered by rules and regulations, he should:

—use his own judgment in the matter.

—always refer the matter to a superior officer.

—do as the majority of his men think best.

—confer with an officer in his command.

In the above type of question the candidate is expected to check one and one only of the four supplementary statements.

Again, as in the false and true questions, this type of question gives the candidate with greater experience and judgment the advantage in promotional examinations. It tends to place the man who best knows his work higher on the list than one who may have ability to write out a good examination paper, but who had not either the judgment or experience desired.

Completion Statements

This type of examination question serves a little better than does the multiple choice statement in that it can be applied to any subject.

In this type of question the candidate fills in the blank space with the word, or phrase, which makes the statement correct.

Specimens of this type of question are given below:

1. The standard sizes of tips on chemical nozzles are . . . . inches and . . . .

2. On a 15-story building the standpipe between the 8th and 10th floors is intended to be . . . . inches in diameter.
3. The standard nozzle in use in this department is named . . . . . .
4. To extinguish incipient oil and gasoline fires the department is equipped with . . . . extinguishers.
5. Three substances which will ignite when brought in contact with water are . . . . and . . . . and . . . .

Subjects Covered

In fire department promotional examinations as given throughout the country, numerous subjects are covered. Many commissions devote a good deal of attention to spelling, English and arithmetic, while others lay greater stress on rules and regulations, and laws and ordinances.

Still others consider fire fighting, industrial hazards, inspection work, hydraulics and kindred subjects of prime importance, with rules and regulations and laws and ordinances secondary.

The following summary shows the present status of the various types of examination questions in the 90 cities reporting civil service, and included in the above list. In considering these figures, it should be remembered that 38 of the cities located in Massachusetts, so far have used only the free answer type of question. Considering these 38 cities, along with the others, making a total of 90, 72 employ free answer types of questions, 31 true and false type, 30 multiple choice statements and 30 completion statement questions.

When it is considered that five years ago practically all cities employed the free answer type, the tremendous growth of the short answer form is most conspicuous.

It is believed that this type of question will supersede the free answer type to a much greater extent.

Many of the cities reporting use all four types, some use three and some two.

In conclusion, this much may be said: Tremendous progress has been made in the past two years in developing questions which more accurately determine the ability of the candidate and which afford a means of accurate rating on the part of the civil service commission. That further progress will be made, there can be no doubt. But it is likely that future changes will involve further developments of the short answer type of question rather than readapting the free answer type to modern needs.

Should Apparatus Leave Town?

(*Continued from page* 928)

any alarm in the Parish. It is believed that such arrangements forestalls the possibility of taking fire department property out of the limits for parade purposes.

Although the General Inspection Bureau, covering Minnesota, North Dakota and South Dakota, has not established a general policy on this subject, whenever a local city official questions their attitude on the matter, they are definitely opposed to the practice. They have always been against a community taking apparatus outside of the corporate limits for purposes other than fire fighting. Even when calls are received from out in the country or neighboring towns, they have felt that some protection should be left in the town for emergency measures.

Those concerned with insurance matters in Idaho believe that the custom has not spread to that state. Idaho fire departments, both paid and volunteer, frequently respond to calls from outside points in case of fire. It is difficult to oppose such cooperation. Chiefs are being educated to the fact, that in such instances, some apparatus and personnel should be left in the town so that the community will not be minus fire protection.

Although taking apparatus out of town to aid others is favored, under stated circumstances, the plan of taking equipment to musters in other towns is opposed.

Cooks County, Illinois, is peculiarly situated. There is not a town in that county that could not receive aid from Chicago within thirty to forty-five minutes. The matter of outside aid has been carefully worked out so that assistance can be rushed in the least possible time. It is believed that a serious hazard would develop if several adjoining communities were to send the apparatus to attend a muster at some distant point.

The Wisconsin Inspection Bureau does not recognize fire department protection extended beyond the city limits unless special apparatus is provided for urban fire fighting. Where a city has two or more pieces of apparatus, they encourage lending aid to adjoining places in the event of a large fire. Where the department has only one piece of equipment, credit is not allowed in the community if apparatus is taken outside the city limits. They write:

"If a community is given credit for a certain amount or type of fire apparatus, we do not believe it logical to take this apparatus outside of the community as the protection is not then available and we do not know when a fire is going to start.

"An interesting example of what may happen occurred several years ago in the city of Fort Atkinson, Wis. An urban call came in and the city department responded with their pumping engine. On the way to the fire, the machine was wrecked and five members of the department were killed. It was approximately ninety days before the wrecked apparatus could be replaced and put in service. During that time, Fort Atkinson was without this valuable protection."

Purchasing Fire Apparatus

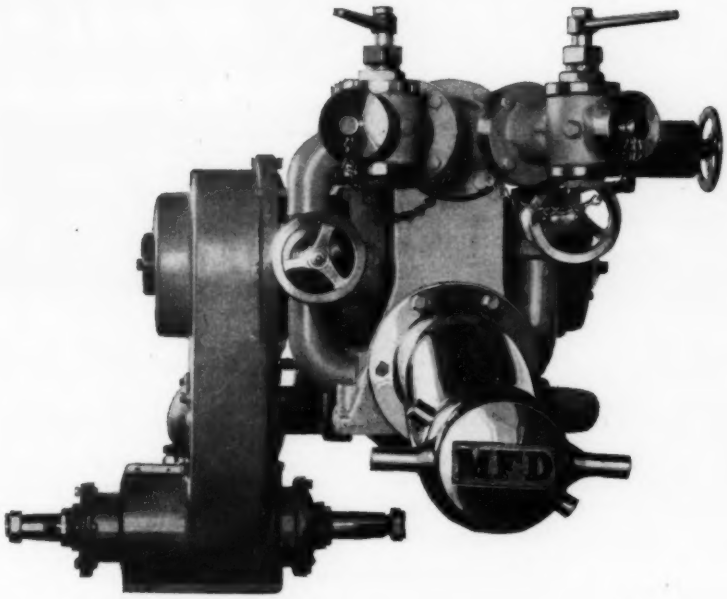
The state law of Wisconsin permits unincorporated communities to band together and issue bonds for the purpose of fire apparatus. In several of the smaller communities, the urban districts have purchased suitable fire equipment which is kept in the city or village, manned by members of the local fire department and responds to urban fires. This equipment is also available in the event of a fire in the community. This plan is well adapted to that state on account of the large amount of concrete roads.

A different attitude is taken in Kansas. Fire apparatus is purchased with the peoples' money for a specific purpose, and for that reason the apparatus should always be in service ready for use. In that state it is not even considered a good plan to respond to fires outside the city limits unless such aid can be given without seriously crippling the service in the city where the apparatus belongs.

It is believed that fire department associations can accomplish more with short courses in fire fighting at annual meetings than is possible with the old time musters. Several states are now conducting such courses annually. The Kansas Fire Chiefs' and Firemen's Associations are considering establishing such a course within the next year or two.

The Mississippi Rating Bureau have no hesitation in condemning the practice described as dangerous. They are against reducing the facilities of a volunteer department to fight fires.

Officials in Iowa have had to issue warnings to a few communities where the entire volunteer department was permitted to attend state or community meetings. No data has been recorded where apparatus was taken out of town. They protested against the use of any con-



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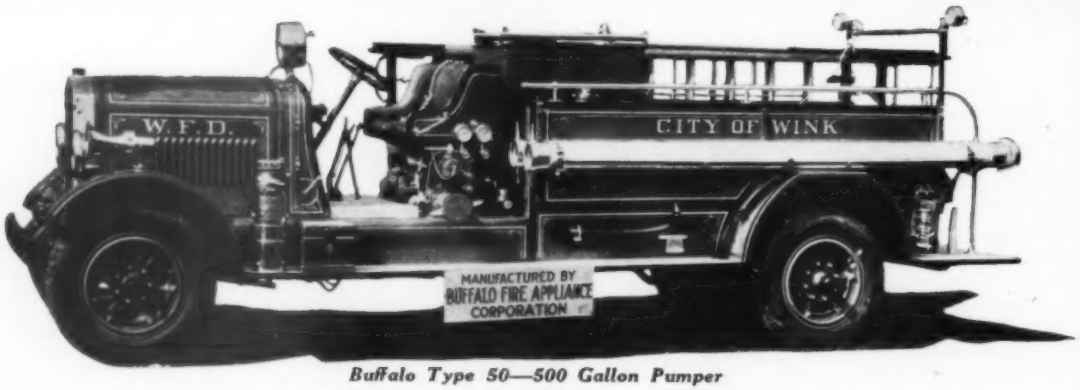

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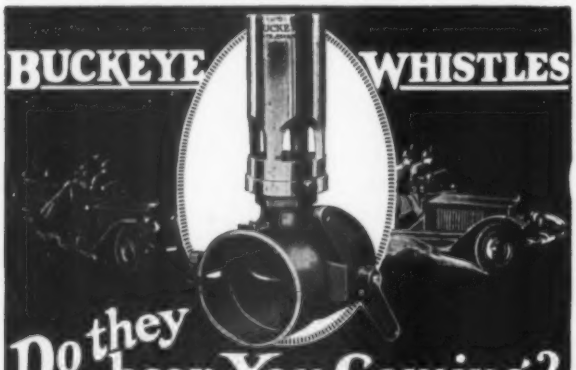

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siderable portion of the city fire fighting equipment appearing in local parades.

The Illinois Insurance Service Bureau states, "We can most heartily endorse your attitude in attempting to get rid of this ill-advised practice which we have been told is carried to unwarranted limits in some sections of the country."

In New England, those concerned with such matters are very much troubled over the scheme of parading fire apparatus for various celebrations within a community. Sometimes apparatus from other places join such local celebrations. The department officers are not always blamed. Often pressure is brought to bear from some faction that makes it compulsory for the apparatus to be so used.

Parades are generally held on streets in the central portion of a community. The outlying companies are called in from their own territory. Streets on which the parade is held are congested with many people, including children, and all roads leading into the central point are jammed with parked automobiles. In case of an alarm, there would be some delay in reaching outlying sections, and there would be danger of persons being injured along the way. The parked cars lining both sides of the street add to the menace.

Risk Overweighs Benefits

The Tennessee Inspection Bureau realizes that a volunteer department, as a rule, needs all the training and practice possible. Training for forthcoming musters, stimulates such activity, but the potential hazard in having the apparatus removed from the community, far outweighs the possible benefits.

E. T. Holman, chief inspector of that bureau, and a trained fireman for many years prior to his present work writes:

"I have never felt that fire protection equipment was intended at any time to be looked upon as playthings. While I can not say that musters and so forth come wholly in the line of play, yet I would not be far off if I did. The Tennessee Inspection Bureau agrees with the stand that you have taken on this question."

Responding to outside calls, except in cases of possible conflagrations, is considered taboo in New York state. Where it is possible for a volunteer department to give aid across the corporation lines, with five hundred feet of hose, then the plan is approved. This refers only to small volunteer departments. In more populated, and therefore better protected areas, sending one piece of apparatus outside of the city would not seriously endanger the community.

Apparatus Often Out of Service

Sections in New Jersey, particularly where the town has only one or two pieces of apparatus, are discouraged from sending their units outside of the town for musters and parades. Last year, many pieces of apparatus were seen along the road to Atlantic City with burned out bearings, blow outs and other troubles, undoubtedly caused by joy riding.

New Hampshire also opposes fire apparatus in parades. In some instances in that state the department was hampered by parade formation and were unable to reach the fire promptly. As a result there was a greater property loss.

A fire prevention engineer who has followed fire chiefs' meetings held in Pacific coast cities, relates that at one gathering a chief advanced the theory that when a neighboring community was fighting a serious fire, it was not honorable for a person or organization to stand idly by and confine his activities to possible rooting. This view point was much applauded.

Another chief brought forth a very plausible argument for the other side. Purchase price and expenses of upkeep come out of each individual resident's pocket. Such defenses cost honest money and few towns are either over supplied with money or fire defenses.

As an example, Mr. Smith and Mr. Jones, neighbors, have contributed to support of the fire department. It would not be fair to Mr. Smith or Mr. Jones to send the apparatus out of town at possible danger to the interests of these two gentlemen. It would not be fair to make them suffer in order to help some suburbanite who has not paid his share for fire protection.

An analysis of the men who advocated their respective sides of the discussion was interesting. The first chief had a department with two or three companies. He could easily send a chemical car or small pumper without seriously crippling his town. The other chief was in charge of a small department with only one company. He could ill afford to send that unit out of town.

The essence of the question on aid was summed up by "Lend assistance when you really have it to give." Let the matter be settled by the taxpayer before a condition requiring aid should occur. The chief then has a clear course to follow.

James N. McCune of the Oregon Insurance Rating Bureau writes:

"When the subject is put up to us by cities in this state, we tell them that they are, of course, under no obligation to respond to such a request for aid—that the credit in insurance rate is granted the city on account of the apparatus provided, but we do not think we can lay down any set rule for cities to follow other than that sending apparatus to answer out-of-town calls is a wrong principle.

"The subject is one on which those in authority must use their best judgment. If a city has two or three pieces, the least efficient unit could be spared in an emergency. In no case should a city be left unprotected."

In one city in Southern Oregon, the chief took the apparatus to the city limit and found a dwelling on fire some few hundred feet from the limit line. He returned to headquarters to secure the mayor's permission before taking the apparatus beyond the limits. The house was totally destroyed. In another instance, apparatus was taken into an adjoining state, across the river on a barge, contrary to good department regulation.

Lessons to be Learned

When so many officials and associations, well versed in the problems confronting fire departments, are so set against conditions covered in this article, it is very evident that to continue to send apparatus out of town, would be in opposition to sound fire department economics. No doubt many towns have been doing it without suffering any drastic results. But there are a number of municipalities that can point to some costly experience.

Don't gamble! Keep the apparatus where it belongs and consider the fireman's obligation to his community.

New Apparatus Plan Defeated in Hempstead, N. Y.—A plan to issue $11,100 bonds for the purchase of fire apparatus has been defeated in Hempstead, L. I., N. Y.

New Haven to Buy Fire House Site—New Haven, Conn., will purchase property, a few feet from the present fire house site, for the erection of a new fire station.

Gary, Ind., Station Nearly Finished—The new $60,000 English type fire station being erected in Gary, Ind., is now almost completed.

Gilson Designs New Type Nozzle

John Gilson, well-known inventor of fire department appliances, has just designed a new type of fire nozzle that makes use of a fundamental principle in engineering. The inventor claims that it will find a number of uses in the average fire department and will replace the need of special nozzles for various operations.

The nozzle is desgined to take the place of the Gilson bent pipe with back pressure hook. There is a well-known principle in physics that every action is equivalent to an equal and contrary reaction. The pressure forward created by the stream creates a reaction that is made to brace the nozzle against a firm obstacle.

The photograph at the left shows the nozzle hooked onto the rung of a ladder. Much of the force necessary by firemen to brace a good-sized stream is eliminated. By working the hose up and down or sideways, the nozzle may be pointed in any

Two Uses for the Gilson Bent Pipe With Back Pressure Hook

direction. At the right, in the illustration, the nozzle is ready to support itself against the edge of a doorway.

The device can be hooked on to an aerial ladder and worked by men on the ground similar to a water tower. It can be dropped through a hole in the floor and used as a cellar pipe in connection with a ladder.

Mr. Gilson is now manufacturing this new device which he considers a vast improvement over his previous nozzles.

Rules and Regulations

(*Continued from page 932*)

Providence, R. I.: The chief shall see that the strength of each company is evenly divided between the two platoons thereof.

Providence, R. I.: The chief shall recommend in writing to the Board of Fire Commissioners (city manager, etc.) such transfer of members as, in his opinion will serve the best interests of the department.

Milwaukee, Wis.: The chief shall have power to cause the removal of any property whenever it shall become necessary for the preservation of such property from fire or to prevent the spreading of fire or to protect adjoining property.

Utica, N. Y., and two other cities: The chief may subject to rules of the Civil Service Board, return to duty any officer or member of the department, absent through illness or other causes, who in his opinion is able to perform duty.

Oklahoma City, Okla.: The chief shall have power, if need be, to summon any persons present to aid in the extinguishment of any fires, and removing personal property from any building on fire, or in danger thereof, and in guarding the same.

Yonkers, N. Y.: The chief shall cause test of apparatus to be made once every month, and of chemical tanks once every six months and have the fire extinguishers on apparatus recharged every month.

Dallas, Texas: The chief shall order all supplies subject to the approval of the Police and Fire Commissioner and the Mayor or Board of Commissioners.

Dallas, Tex. (Council of Chiefs): They may adopt such rules and regulations as may be deemed advisable concerning the assignment of the assistant chiefs, captains and other members of the department and concerning the conduct of members of the department on or about any station house, or while engaged in the service of the department.

Toledo, O.: The chief shall submit without delay, the resignation of any member of the division, or notice thereof in writing, to the Director of Public Safety.

Rochester, N. Y.: The chief shall see that members of the department are properly instructed regarding the guarding of electric wires of all character, both at fires, and when such wires may have fallen into the street or may be hanging within reach.

Baltimore, Md.: The chief shall report daily, on form provided, to the Board of Fire Commissioners operations of the fire department generally.

BUILDING UP AND SAFEGUARDING A PENSION FUND FOR DEPARTMENTS

Deposits Must Be Made in Accordance With State Law for Public Funds—All Receipts Must Pass Through the Secretary's Office

By FRED LUNDQUIST,
City Manager, Elkhart, Ind.*

IN February, 1921, the Legislature of Indiana provided that in every city of the first, second, third and fourth class maintaining a regularly organized and paid fire department, there should be organized a Board of Trustees of the Firemen's Pension Fund. This Act provided the method of collection of same and also certain rules in regard to investments of same.

Investigation of the funds in various cities throughout Indiana reveal that very few funds are handled or taken care of in the same manner. It is noticeable that in many places that while other funds of the city are strictly cared for in manner prescribed by the State Board of Accounts, there has been no prescribed method for the handling of the pension accounts. Some of the treasurers do not adhere strictly to the thought that this is a public account and must be handled in the same manner as any other fund and the same rules that apply to city deposits apply alike to pension fund except as expressly provided otherwise.

Method of Taking Care of Accounts

The City of Elkhart organized its Pension Trustees in October, 1920, and since that time the following method has been used in taking care of the accounts:

In receiving money into the city accounts, the applications to pay must be made to the city controller and the payment made to the city treasurer. We have in our city the same form of application to pay money into the firemen's pension fund as the city uses. The application to pay is made to the secretary of the board and when the application has been properly made out, the payment is made to the city treasurer who by law is the treasurer of the pension fund. The treasurer then issues his receipt for the amount paid in and designating the source of the payment and the reason therefor.

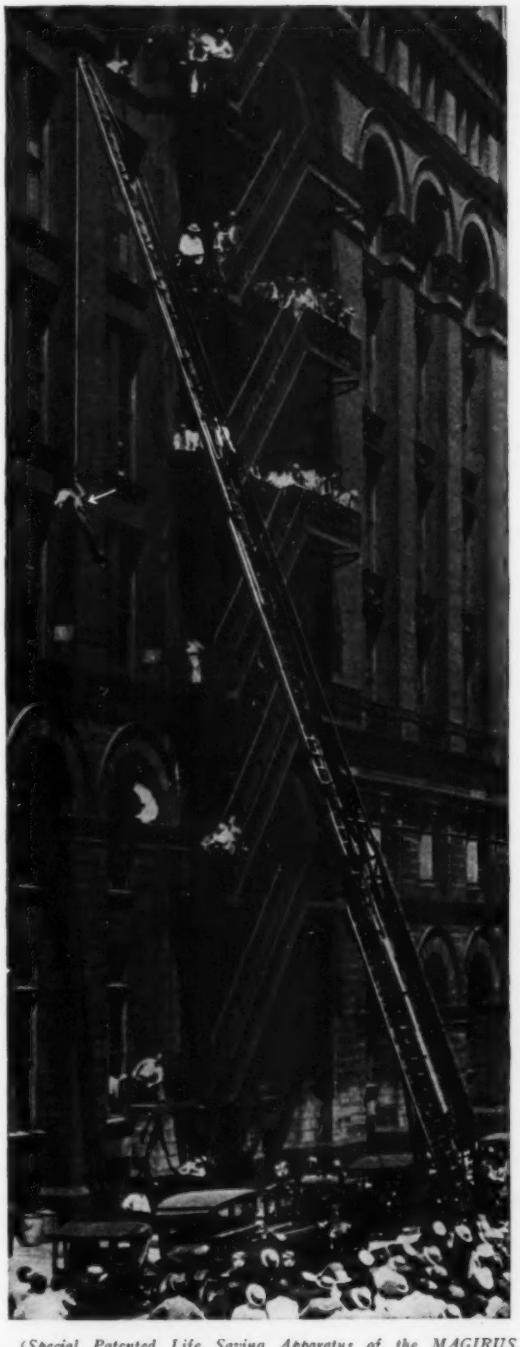
The receipts must pass through the hands of the secretary whether it is pension assessment, tax levy, interest, gifts, or any other source of income. The secretary has a duplicate in his receipt book and his entries are made from this duplicate.

The secretary keeps a record in his book of receipts of all these accounts in the same manner as the treasurer so that at any time the books of either can be audited by a comparison.

In like manner all disbursements are issued through the office of the secretary of the pension board who submits them to the president of the board and the city treasurer for their signatures. The secretary of the board in his record of disbursements keeps an accurate

* From the *Indiana Fireman*.

Milwaukee's 100 ft. Magirus Aerial Saves Four Lives



(Special Patented Life Saving Apparatus of the MAGIRUS Aerial Ladder Truck, Milwaukee, Wis. Apparatus handled by ONE MAN.)

(Excerpt from "The Milwaukee Journal" (Front Page) Saturday, July 28, 1928:)

FOUR TRAPPED IN FIRE SAVED!

New MAGIRUS LADDER Is Used to Rescue Three Boys and Girl!

"The Fire Department's new MAGIRUS Ladder was called into active service Friday night for the first time and enabled firemen to RESCUE three youths and a girl, WHO HAD BEEN TRAPPED IN A FIRE in a rooming house at 661 Jackson St.

Fifteen other persons, living on lower floors of the house, left safely and a woman, partially overcome by smoke as she was rushing downstairs, was carried out by firemen.

Three Boys Sleeping!

The boys, Gerald and Eugene Gallagher, 17 and 16, and George Kibbey, 15, were sleeping in an attic cupola of the house when the fire broke out on the second floor. They were unable to leave their room because of the dense clouds of smoke and climbed out their window and leaped a two-foot gap to the slanting roof of the adjoining building, where they crouched, in momentary dread of slipping, until the aerial ladder was hoisted to them.

Patsy Gallagher, 22, sister of the Gallagher boys, was not able to get out of her room and leaned out a window, calling for help. The ladder was put up to her window after the boys got to the ground.

Mrs. Anna Hama was carried out by the firemen. The MAGIRUS Ladder arrived only a few weeks ago and had never before been used at an IMPORTANT FIRE, but daily practice with it enabled firemen to handle it easily."

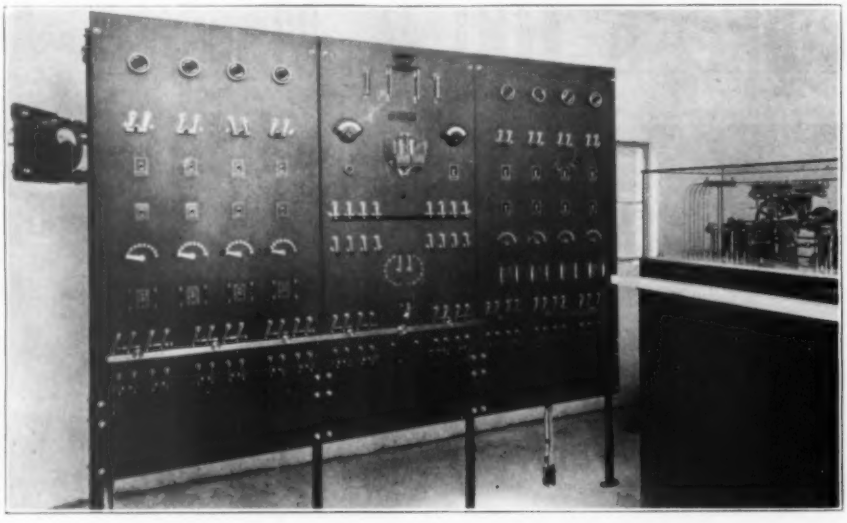
Sidney-Ohio ORDERS 85 ft. MAGIRUS AERIAL LADDER and WATER TOWER

The City of SIDNEY contemplated the purchase of a CITY SERVICE TRUCK for their Fire Dept., but after witnessing a demonstration of a MAGIRUS Aerial Ladder and Water Tower Combination Truck, they ordered a Magirus Aerial, being the most economical and most suitable truck for their conditions, as this 85 ft. aerial ladder truck is driven and operated by only ONE MAN, and requires no more space than a pumper, measuring only 27 ft. 4 inches over-all (173" wheelbase.)

SEE an 85 ft. MAGIRUS Aerial Ladder with SIDE LADDERS, Fire Equipments, etc., at the PHILADELPHIA CHIEFS' CONVENTION!

AMERICAN MAGIRUS FIRE APPLIANCE CO., Inc.

4243 Broadway Indianapolis, Indiana



Central Office Fire Alarm Equipment, Petersburg, Va.

FIRE ALARM EQUIPMENT

Above is illustrated the central office fire alarm equipment recently installed by Harrington-Seaberg at Petersburg, Virginia—the complete installation including fire and police signal boxes. Harrington-Seaberg fire alarm and police signal equipment is protecting life and property in practically every state in the Union and in many foreign countries.

Write today for descriptive circulars and prices.

HARRINGTON-SEABERG CORPORATION

Municipal Signal Manufacturers

MOLINE — ILLINOIS

Fire Alarm, Police and Traffic Signal Equipment. Offices in Principal Cities

Eastman Nozzles and Deluge Sets

Keep down your fire loss by using Eastman Deluge Sets and Nozzles.

Large streams are the only kind that put out large fires.

Small streams are turned into gas and make the fire hotter.

The fire loss of $500,000,000 per year is caused by large, not small ones.

WRITE FOR CATALOG

SAMUEL EASTMAN COMPANY, Concord, N. H.

Saves time - *and costly hose*

No. 1 (Capacity 3 to 7 tons, weight each 72 lbs.)

No. 2 (Capacity 3 to 12 tons, weight each 118 lbs.)

Patented

It's often necessary to move apparatus at a fire. Automobile traffic hates to be held up by a line of hose stretched across the right of way.

Why ruin your hose by driving over it? Or waste valuable time cutting off and disconnecting?

The Wausau Protector is a big time and money saver—easy to handle and carry. Order a set today, or write us for particulars.

A few of the many Fire Chiefs that use the Wausau Fire Hose Protector

Chiefs	
C. W. Ringer	Minneapolis, Minn.
L. H. Clark	Cloquit, Minn.
J. R. Welsh	Eau Claire, Wis.
G. A. Johnson	Menominee, Wis.
J. H. Legett	Tarrytown, New York
Chief Jensen	Lincoln, Neb.
G. Olson	Hastings, Minn.
O. Olson	Hudson, Wis.
G. Billings	Antigo, Wis.
E. Schwartz	Columbus, Wis.
Chief Zeildorff	Wausau, Wis.
E. C. Joecken	Rockey River, Ohio

Complete information of prices on request

Wausau Fire Hose Protector Co., Inc.
1520 Harmon Place, Minneapolis, Minn.

record of all warrants issued charging them to the proper account.

This method of keeping a record in the secretary's office of both receipts and disbursements allows the fire department to have a complete record of its fund without relying on the records of the treasurer so that any time the department can check up on its own fund.

The treasurer monthly issues a statement in his report giving in detail the information as to the investment of the funds and as to deposits made.

The law provides that on all public funds a depository must agree to pay interest at the rate of two per cent (2%) per annum on all of their deposits and that they must furnish proper bond or security for this deposit.

It is important to the pension fund that the deposits in the fund be made in accordance with the law. In the first place in order to come under the depository law the rules regarding the deposits of funds should be followed. In this manner the bond for the deposit of public funds has been held by legal opinion to cover the deposit of pension funds.

In some cities it is found that this fund has been awarded to banks paying the highest amount of interest on bids submitted, but this method is questionable as it might invalidate the depository bond in the opinion of some good authorities.

If a higher rate of interest is desired than that provided by the depository law, then the method of investing funds should be strictly followed.

How Funds May Be Invested

The board of trustees when they find that there is more money in the depository than the probable demands on such fund may be, may determine what part of said fund shall be invested in securities provided in the pension fund act.

It is well to consider the security of the investment when funds are to be invested in the securities mentioned in the act. United States government, county and city bonds are, of course, a good investment but do not yield as large a return as city improvement bonds.

The present rate of interest on improvement bonds is five per cent (5%) to six per cent (6%) but is not often possible for a pension fund to secure any good bonds at six per cent (6%) basis. The general rate of interest being not to exceed five and one-half per cent (5½%) for good bonds. In selecting municipal bonds for investment, it is a good policy to investigate very closely the improvements that the bonds cover and the city by which they are issued.

In some cities in Indiana improvement bonds are paid at maturity regardless of whether there are any delinquencies on the street improvements that the bonds cover but it is not well to rely too much on this feature as it is within the judgment of city officials to change their policy in this regard at any time. Therefore, great care should be exercised that bonds are not bought on improvements that are doubtful of collection.

It is well not to forget that a bond should stand on its own merits rather than on the thought that the city will pay it even if delinquent.

Record of all bonds with the numbers and maturity dates should be in the hands of the secretary of the board so that complete information in regard to the investment of the funds is available to the firemen without consulting the records of the treasurer.

It may appear at the first glance that this involves quite a little bookkeeping on the part of the secretary of the board, but the average city in Indiana does not have any great number of receipts or disbursements. A nominal sum for this service should be paid to the secretary for his added duties and, in the opinion of the writer, is a sum well invested.

It should always be borne in mind that the pension fund is a fund created for the benefit of the firemen and is their fund. Knowing the state of one's bank account is a good idea not only for the individual but for any organization and only by keeping its own separate accounts can this information be available at all times to the members of the department.

SPONTANEOUS COMBUSTION BLAMED FOR MANY MYSTERIOUS BARN FIRES

Urgent Need for More Scientific Information Regarding Self-Ignition of Hay and Other Farm Products—Typical Cases

MANY of the "mysterious" barn fires occurring throughout the rural communities of the United States along about harvest time are caused by "spontaneous combustion," or "self-ignition," of hay and other agricultural products, according to David J. Price of the United States Department of Agriculture, who addressed the annual convention of the National Association of Mutual Insurance Companies at Milwaukee, Wisconsin (October 2).

"Fires on the farm and in the rural communities cause an annual loss of 3,500 lives and a property loss of approximately $150,000,000," he said. "Of this amount, $30,000,000 can be charged to spontaneous combustion, a loss so great that any national effort to reduce it would be amply justified."

Although it was recognized centuries ago that stored hay, manure, and other farm products occasionally become hot enough under certain conditions to ignite, very little attention has been given to the problem until recent years. Even now there is a dearth of scientific information on spontaneous combustion. To meet the urgent need for such knowledge the department is making a special study of farm fires, and it is hoped the findings may lead to the development of control and preventive measures. Practically all national organizations interested in farm fire protection are cooperating with the department in this study.

A case of spontaneous ignition in stable manure occurred on the department's experimental farm at Arlington, Virginia, a few years ago, Mr. Price said. Manure had been hauled from a nearby cavalry station and placed in one large pile for curing before being used for fertilizing purposes. Daily additions had been made to the pile for two or three years, and at times it had been observed in a "heating" condition but was not considered dangerous. Fire broke out in the night on one side of the large pile and was extinguished. The following day fire broke out on the opposite side and an inspection showed so many hot areas along the edge that the entire pile was torn down under frequent sprinkling with water. This very definite observation, as well as many others of a similar type, indicates the possibility of spontaneous ignition of manure piles which may in some instances be closely related to unexplained barn fires. In a three-year period, more than four hundred barn fires in the Province of Ontario were investigated and authorities concluded that "at least one-half of these fires have been directly and solely caused by spontaneous heating." It appears also from these investigations that there are a number of good reasons for the increased number of "mysterious" barn fires. Many of them are closely related to changes in farming. The present crops, now consisting largely of alfalfa and clover hays, can not be properly cured and put in condition to be housed, as was done in former days with crops which consisted principally of timothy. The old-time custom of salting hay in the mow has largely disappeared, an unfortunate situation, as salting has been an accepted means of retarding combustion. New types of machinery also may be held responsible for handling the crop so rapidly that it does not have time to cure properly before being stored.

"Uncured hay," it is explained, "continues to live for some time after it is cut, and heats when stacked in large piles. Also, the fermentation of bacteria, yeasts and molds, which increase rapidly in horse manure, uncured hay, green pea vines and other damp roughage, generates heat, which accumulates at the center of a heavy mass of these materials, eventually to such an extent that the small amount of air that filters into the pile can cause ignition."

The problem of spontaneous ignition not only is related to farm products but extends into practically all lines of industry, and results in extensive economic losses. It is a problem of national importance and one that justifies thorough scientific research.

FIRE DEPARTMENT ACTIVITIES

Orange, Va., Buys Pumper—A 500-gallon pumper has been purchased for Orange, Va.

Butte, Mont., Repairs Fire Alarm System—Repairs are being made to the fire alarm system of Butte, Mont.

Mt. Prospect, Ill., to Buy Apparatus—Mt. Prospect, Ill., is considering the purchase of fire apparatus.

Sigourney, Ia., Buys Chemical Car—Sigourney, Ia., has purchased a Chevrolet car for carrying chemical tanks on rush runs.

Sioux City, Ia., to Buy Pumper — The council of Sioux City, Ia., has authorized the purchase of a 500-gallon pumper for $7,000.

Fond du Lac, Wis., to Buy Apparatus — Officials of Fond du Lac, Wis., visited Kenosha to inspect fire apparatus prior to placing an order for additional equipment.

New Wage Scale for South Gate, Cal.—Firemen in South Gate, Cal., will now be paid $175 a month and an allowance of $20 a month for the chief.

New Boxes Placed in Anderson, Ind.—Fifty-six new fire alarm boxes are being installed in Anderson, Ind., under the direction of Louis Miller, city electrician.

Yakima, Wash., Fire Marshal Resigns — Harry Connors, fire-marshal in Yakima, Wash., since 1925, has presented his resignation to become effective from January 1.

Scobey, Mont., to Erect Fire Hall—Scobey, Mont., has opened bids for the erection of a fire hall. It is hoped that the building will be completed late in the fall.

Fire Alarms Completed in Conshohocken, Pa.—The new fire alarm system has been completed in Conshohocken, Pa., and officially turned over to the Borough.

Apparatus Urged for Hatton, Ill.—Chief Weaver of Hatton, Ill., has urged the purchase of a new pumper, a ladder truck and fire hose estimated to cost, in all, $35,000.

Uniontown Collecting Convention Funds — The Uniontown, Pa., fire department is collecting funds for the firemen's state convention that will be held in Uniontown, October 1-5.

Changes Suggested for Royal Oak Alarm — A unified number of all fire alarm boxes in Royal Oak, Mich., has been suggested.

Another Item Delays Dallas Station — Another delay has arisen to stop construction of the new fire station for Dallas, Tex. In searching title for the proposed site, it was found that a building encroached on neighboring property.

Rome, N. Y. to Buy Pumper—Rome, N. Y., will purchase a 1,000-gallon Seagrave pumper for $13,000. An allowance has been made for the old fire apparatus. The contract calls for delivery in seventy-five days.

Florence, N. J. May Buy Pumper—Florence, N. J., is considering means for financing the purchase of a new pumper. The purchase has been authorized but the department has to raise the funds.

Collins, N. Y., to Erect Fire House—Collins, N. Y., will erect a fire house and purchase equipment. Many of the volunteer firemen have donated their services to aid in constructing the station.

New Apparatus Urged for Freeport, N. Y.—Recommendations for the purchase of fire apparatus totalling $19,175, have been presented to officials by Chief William F. Dunker. If the board approves, bonds will be issued.

Hartford, Conn., May Vote on Fire House—Hartford, Conn., may vote at the November elections, on an appropriation for the construction of a fire house in the southwestern part of the city.

Department Formed in Grand Rapids, O.—A fire department has been formed in Grand Rapids, Ohio. Funds are being raised for apparatus under a tentative agreement with the Howe apparatus organization.

Thirty Men May Resign from Nyack, N. Y.— Thirty members of the Nyack, N. Y., fire department will have to resign according to a state rule governing volunteer fire departments. Since they joined the department, the thirty men moved outside the fire district and are therefore ineligible.

Bayonne, N. J., to Erect Fire Stations — Contracts have been awarded for the construction of two new fire stations in Bayonne, N. J. Each building will house an engine and a truck company, and will have sleeping and recreational facilities for twelve men on the second floor.

Keyport, N. J., Out For Ambulance—The first aid squad of the fire department in Keyport, N. J., is raising money with which to purchase an ambulance. Since the organization of the first aid squad on March 6, sixteen calls have been answered.

Shorewood, Wis., to Have Department—Shorewood, Wis., is to have its own fire department. A building has been authorized, estimated at $50,000 to house the police and fire departments. A combination pumper and chemical, and a fire department car will be included in the equipment.

Lieutenants Want Captain Ratings—Lieutenants in Seattle, Wash., are making an effort to obtain captain ratings thus doing away with the office of lieutenant. An opinion by the city council states that it would be necessary to abolish the lieutenants' grade and create new positions for captains.

Union Wants Protection for Firemen—The International Association of Fire Fighters, affiliated with the American Federation of Labor, announced they would try to get legislation that would make municipalities liable in damage suits growing out of personal injury cases involving drivers of fire apparatus.

Improvements Suggested for Helena, Mont.—The Pacific Board of Fire Underwriters has suggested a number of improvements for Helena, Mont. They advocate the purchase of a 750-gallon pumper, provision for a light hose and chemical car, a modern building code and for a city ordinance regulating the transportation of explosives.

Defective Steering Gear Cause of Accident—Three firemen in Boise, Ida., have been injured in an accident to a fire truck. The apparatus was being directed around a turn at a speed of thirty miles an hour. The truck was wrecked as it sideswiped two large trees. The apparatus was making a run to a flue fire that resulted in little damage.

Twelve Firemen Added in Great Falls—Twelve volunteer firemen have been added in Great Falls, Mont.; the volunteers receive ten dollars a month and lodging. The men are required to sleep in the fire department building and will drill a number of times. At present there are thirty regular firemen and twelve volunteers.

Chief Callahan on Dry Cleaning Committee—Chief H. J. Callahan of Fort Dodge, Ia., delivered a talk before the Iowa Firemen's Association convention. As a result he has been appointed to the legislative committee of the organization to consider ways and means to have a bill passed by the legislature governing the operation of dry cleaning establishments.

Portland, Ore., Chief Has Close Call—Battalion Chief Haines of Portland, Ore., narrowly averted serious burns while responding to a fire call. His machine skidded and overturned in a patch of dirt, pinning him beneath the car. Firemen who followed the chief's car in the company apparatus, used axes to free him. The car was a total wreck.

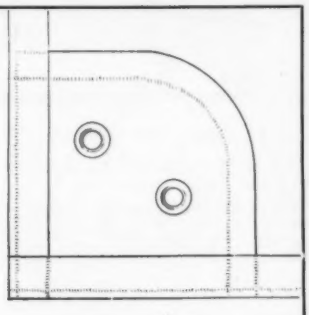
Fire Station Promised for Beaverdale—A new fire station has been promised for the Beaverdale section of Des Moines, Ia. The Mayor is trying to prevent the issue of $17,000 bonds to finance the building, on the grounds that the city is almost up to its limit in indebtedness. The residents there have been petitioning for a new fire station for a number of years.

Chief Evans Stumps for Pay Increase—Chief John M. Evans of New Orleans, La., has been making a number of speeches in the state in the interest of a proposed amendment to increase the pay of firemen and policemen. He also attended the convention of the Louisiana State Firemen's Association at Opelousas.

Difficult to Organize New Fire Department—The mayor of Langdon, N. D., has found that it is not so easy to organize a fire department. The volunteer firemen resigned following a squabble and the mayor stated that he would have a new force organized within twenty-four hours. Residents refused to sign up for what they term "scab" work. The men resigned because the council refused to give them adequate equipment.

Plan to Have Thomas Baird as Expert—A plan has been suggested to prevent blocking the reorganization of the fire department under Superintendent Thomas Baird at Santa Barbara, Cal. Under the plan, Mr. Baird would be employed as an expert to advise the city council and Deputy Chief Freeman would be an employee of the city as drill master of the fire department.

"Clifton" Salvage Covers



are Built to Stand Abuse

CLIFTON COVERS are made from selected duck, coated with the best wearing compound available. Seams are lapped; corners extra well reinforced. Double coating of high grade, long life rubber compound on both sides. Rugged enough to stand most strenuous service but light enough to be easily handled. Weight 38 pounds. Made 12 x 18 feet which is the standard size. Used by departments everywhere. Be sure to specify CLIFTON the next time you order covers.

Send Now for Complete Information and Prices

Clifton Manufacturing Company

Jamaica Plain **Boston, Mass.**

Play Safe

by using the new

GILSON

All-Angle Nozzle

Equipped with Back Pressure Hook

Gets a real fire stream into the difficult places the straight nozzle cannot reach.

With the Gilson All-Angle Nozzle you can get your stream on the fire without subjecting the men to unnecessary punishment. Used on ladder, the nozzle puts the water through the window right where it's needed, while the men direct it from a point below—where they are protected from the heat.

In cellars, sub-cellars and in the holds of vessels it does its work equally well, with the men manipulating the direction of the stream from a point of safety above.

It's a nozzle you ought to have—write for further details.

F. H. LOVELL & CO.

ARLINGTON, N. J.

DEALERS—Write for special proposition.

"I heartily endorse the Gilson nozzle. I have examined it very carefully and find it has many advantages in fighting fire where it is difficult to use the straight nozzle."

CHAS. H. GREENFIELD
Pres. N. J. State Fire Chiefs' Assn.

FALSE ALARMS

FACTOR OF SAFETY

The wife, awakened by a fire siren, poked her hubby and said:

"Wake up, darling, I think the whole town is on fire. The sky is all lit up. Wake up! Wake up!"

The hubby came to slowly, indolently arose, sleepily felt the four walls of his room, yawned and stretched out. He murmured to his wife:

"The walls are still cool." And he went back to sleep.

AH, FOR REVENGE

In a certain Massachusetts town, a member of the fire department broke his engagement with one local girl to marry another. Such things happen but in this case the results were rather unusual.

This young lady is revenging herself for being thus jilted. Every night, toward the small hours of the morning, she turns in a false fire alarm to disturb her one-time sweetie's slumber. Night after night the sleepy firemen go rushing on a fool's errand.

Although the calls can't be traced to this lady, members of the department are inclined to believe that she is causing the trouble.

If you get up earlier in the morning than your neighbor, and work harder and scheme more and stick to the job more closely and stay up later planning how to make more money than your neighbor and burn the midnight oil planning how to get ahead of him while he is snoozing, not only will you leave more money when you die than he will, but you'll leave it a damsite sooner.

MEANT THE SAME

At the state fireman's convention, there was one room at the official hotel that appeared to have an especial attraction.

One delegate went back to a group from his home town, with the delicate odor of liquor hanging around him.

His commisisoner remarked; "You told me that you refused to drink."

"You're wrong. I just said that I had turned one down."

POINT OF VIEW

During Fire Prevention Week, one lieutenant who was accustomed to public speaking was assigned to give short talks at various meetings. As he was preparing to leave the station for an appointment, an alarm came in, and he hopped on to the outgoing apparatus.

After the fire was extinguished, the lieutenant began brushing his clothes before continuing to the place where he was supposed to speak. Turning to a fellow officer he asked:

"Is my face dirty or is it my imagination?"

"Your face isn't. I don't know about your imagination."

People who carry it in glass bottles, should not sit on stones.

—Drawing by "Art" Estey

Why Not Establish a House Moving Unit in Your Local Fire Department?

How many times when water pressure was low, and fire raged in some frame house, have you been forced to stand by and hope for rain or some heavenly aid to check the blaze? How many times have you wished that the house on fire was located in the center of an acre plot of ground, away from other dwellings? Gentlemen, stop wishing! Follow the lead of a California fire department and train your firemen for housemoving work. In this California town, homes were jacked up and moved away from the territory of a burning oil well. Think of all the water that could be saved, the suffering of the housewife who just knows that her best furniture will be spoiled, and how much could be saved, if each department followed this plan. Once the house has been removed there is no need to worry. The foundation will always be saved. Homes near a river or lake should be built on a runway. Then in case the homes take fire, it will only be necessary to start the building down the chute and into the water. Just consider how much easier such an arrangement would be for the firemen.

Wherever POWERFUL Streams are Needed

You'll find Fire Departments Installing

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Combination Spanner furnished

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PROPOSED IMPROVEMENTS

South Bend, Pacific Co., Wash.—Special election to be held in December to vote on question of issuing bonds for purchase of new fire apparatus. D. Coulter, Chief of Fire Dept.

Newton, Middlesex Co., Mass.—Board of Aldermen was requested to make an appropriation for the construction of a new central fire station.

Hot Springs, Garland Co., Ark.—E. J. Fowler, City Clerk, will receive bids until Oct. 22 for $41,000 bond issue for purchase of fire apparatus and equipment.

Sand Springs, Tulsa Co., Okla.—A recent election resulted in favor of issuing fire department bonds to the amount of $15,000.

Proposals For Fire Apparatus

ROANOKE, VA.

Bids received until Oct. 26, 1928.

Sealed proposals addressed to W. P. Hunter, City Manager, Municipal Building, Roanoke, Virginia, will be received until Noon, Friday, October 26, for furnishing two six (6) Cylinder Triple Combination Hose, Pump and Chemical Engines. Capacity 750 gallons against 120-pound net pressure.

Specifications may be obtained from C. C. Meador, Chief of the Fire Department, on and after October 10, 1928. The right is reserved to reject any or all bids and purchase equipment best suited for the Roanoke Fire Department.

W. P. HUNTER,
City Manager.

Roanoke, Virginia, October 9, 1928.

Proposals for Fire Hose

NEW BEDFORD, MASS.

Bids received until October 24, 1928

Proposals will be received at the office of the Chief of the Fire Department, Central Fire Station, New Bedford, Mass., until and opened at 11 o'clock, A. M., Wednesday, October 24, 1928, for furnishing and delivering 2500 feet of 2½" double jacket cotton rubber lined fire hose, coupled in 50 foot lengths, each length bearing the Underwriters' label and National Standard Hose Thread.

Proposals must be sealed and plainly marked upon the outside of the envelope, "Proposals for Fire Hose."

The right is reserved to reject any or all bids.

EDWARD F. DAHILL,
Chief of Fire Department,
New Bedford, Mass.

10-17

Football Game to Aid Emergency Fund

Following the convention of the International Association of Fire Chiefs at Philadelphia, the Los Angeles-New York fire department football match will be held in New York City at the Polo Grounds on Sunday, October 21, to aid the Honor Emergency Fund of the department.

The Honor Emergency Fund has been doing good work since its incorporation in 1921. It has assisted members of the uniformed force and their families when in need. Part of the proceeds of the game will go to increase the size of the fund to enlarge the income. For the past two years, the income has been insufficient to meet the demands made upon it. New York firemen are doing their best to fill the Polo Grounds on the day of the match.

The Los Angeles Fire College

(*Continued from page* 930)

by Chief Dodd on Ventilation, illustrated by 53 slides. Demonstration on roof of method of ventilating for fire in a model house. Class given copy of Lesson Ten.

Nov. 21 to Dec. 19—Written examination on Lesson Ten. Lecture by Capt. Gowell on Division of Decimal Fractions. Lecture by Chief Dodd on Salvage, illustrated by 59 slides. Moving picture, three reels, entitled "The Salvage Man," produced by Metro-Goldwyn-Mayer in cooperation with Chief Dodd. Class given copy of Lesson Eleven.

Dec. 19, 1927, to Jan. 16, 1928—Written examination on Lesson Eleven. Lecture by Chief Dodd on Overhauling. Lecture by Capt. Gowell on Square Root, with class working problems. Class given copy of Lesson Twelve.

Jan. 16 to Feb. 13, 1928—Written examination on Lesson Twelve. Lecture by Chief Dodd on Dust Explosions, illustrated with 71 slides and one-reel motion picture by U. S. Dept. of Agriculture. Lecture by Capt. Gowell on Principles of Hydraulics and hydraulics formulas for finding area, contents, weight of contents. Class given copy of Lesson Thirteen.

Feb. 13 to March 12—Written examination on Lesson Thirteen. Lecture by Capt. Gowell on Suction and Velocity. Lecture by Capt. Pierret on Refrigeration, illustrated with 41 slides. Demonstration by Capt. Pierret of ¼-ton Arctic ammonia plant in full operation, and one Frigidaire plant in operation; also a 3-ton Parker ammonia plant not in operation. Class given copy of Lesson Fourteen to study.

March 12 to April 9—Written examination on Lesson Fourteen. Lecture by Capt. Gowell on Discharge. Lecture by Chief Baly on Ship and Dock Fires, illustrated with 65 slides. Class given copy of Lesson Fifteen to study.

April 9 to May 7—Written examination on Lesson Fifteen. Lecture by Captain Gowell on Friction Loss. Lecture by Chief Dodd on Oil Storage and Oil Fires, illustrated with 104 slides and three reels of motion pictures, showing use of foamite towers and La Brea and San Luis Obispo oil tank fires. Class given copy of Lesson Sixteen to study.

May 7 to June 4—Written examination on Lesson Sixteen. Lecture by Capt. Gowell on Underwriters' Formulas for Finding Engine or Nozzle Pressure. Lecture by Capt. Marietich, of Rescue Co. No. 1, on Care of First Aid Kits, First Aid Work with Use of Smoke Helmets and Breathing Apparatus; in this demonstration Capt. Marietich was assisted by members of his company, and members attending classes were also called upon to take part. Copy of Lesson Seventeen given class to study. Lecture by Chief Dodd on Firestreams, illustrated with 64 slides. Lecture by Capt. Gowell on Angles and Penetration. Copy of Lesson Eighteen given class to study.

July 2 to 27—Written examination on Lesson Eighteen. Lecture by Capt. McCann on Provisions of the Pension Act. Lecture by Capt. Gowell on Mental Calculation, showing how to figure roughly pressure needed at fires. Class given copy of Lesson Nineteen to study. The Firestone Tire Co.'s three-reel motion picture, "Care of Tires on Apparatus," was also shown.

July 30 to Aug. 27—School closed.

Aug. 27 to Sept. 21—Written examination on Lesson Nineteen. Lecture by Chief Dodd on "Details to Places of Public Assemblage and Theatre Fires," illustrated with 65 slides. Class given copy of Lesson Twenty to study.

CONVENTION DATES

Oct. 15-17—EASTERN ASSOCIATION OF FIRE CHIEFS. (Eastern Division, I. A. F. C.) First Annual Convention, Bellevue-Stratford Hotel, Philadelphia, Pa. (Just preceding I. A. F. C. Convention.) Secretary, T. Howell Johnson, Room 602, Chamber of Commerce Bldg., Newark, N. J.

Oct. 17-20—INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. 55th Annual Convention, Bellevue-Stratford Hotel, Philadelphia, Pa. Exhibits at Second Regiment Armory. Secretary, Chief James J. Mulcahey, Yonkers, N. Y.; Executive Secretary, Jay W. Stevens, Merchants' Exchange Bldg., San Francisco, Cal.; Chairman, Exhibits, Chief August Gerstung, Elizabeth, N. J.

Oct. 23-26—International Association of Municipal Electricians. Annual Convention, New Orleans, La. Secretary, Harold N. Lang, P. O. Box 1864, Orlando, Fla.

Oct. 29-31—KANSAS STATE FIRE CHIEFS and FIREMEN'S ASSOCIATIONS and WOMEN'S AUXILIARY. 13th and 42nd Annual Conventions and 3d Meeting, respectively, Liberal, Kan. Secretary, Chief K. D. Doyle, Wamego, Kan.

Statement of Ownership

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of FIRE ENGINEERING, published bi-weekly at Albany, New York, for October 1, 1928.

State of New York, County of New York, ss.:

Before me, a Notary Public in and for the state and county aforesaid, personally appeared I. H. Case, who, having been duly sworn according to law, deposes and says that he is the General Manager of FIRE ENGINEERING and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of Congress of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, Case-Shepperd-Mann Publishing Corporation, 225 West 34th Street, New York City.

Editor—Robert H. Lockwood, 225 W. 34th Street, New York City.

Managing Editor—Fred Shepperd, 225 W. 34th Street, New York City.

General Manager—I. H. Case, 225 W. 34th Street, New York City.

2. That the owners are:

Case-Shepperd-Mann Publishing Corporation, 225 W. 34th Street, New York City.

I. H. Case, 225 W. 34th Street, New York City.

Fred Shepperd, 225 W. 34th Street, New York City.

Karl M. Mann, 225 W. 34th Street, New York City.

Robert H. Lockwood, 225 W. 34th Street, New York City.

3. That the known bondholders, mortgagees, and other security holders, owning or holding 1 per cent, or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain, not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

I. H. CASE,
General Manager.

Sworn to and subscribed before me this 26th day of September, 1928.

(Seal) GODFREY L. TRAUTMAN.

(My commission expires March 30, 1929)

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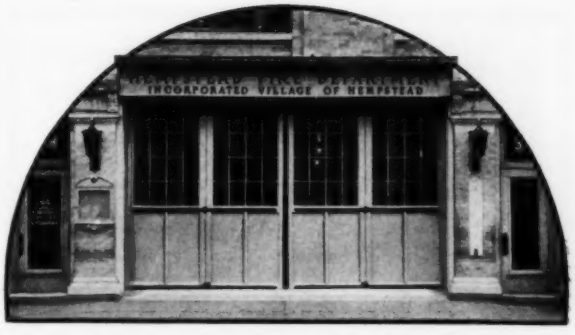

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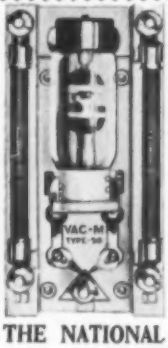

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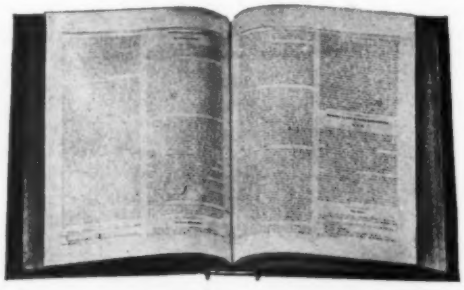

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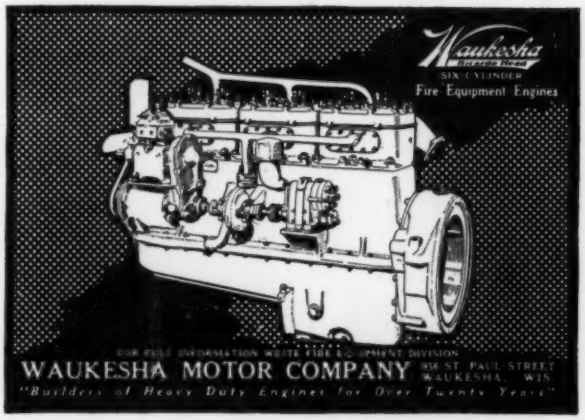

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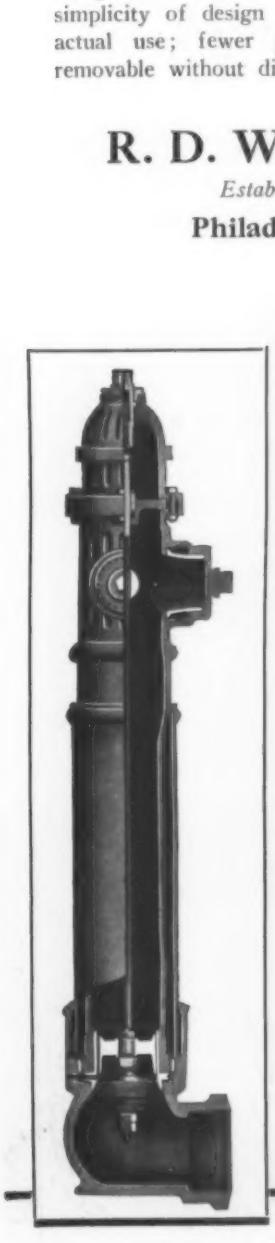

On the evening of November 9th, 1872, fire broke out at the corner of Summer and Kingston Sts., Boston, and spread until 70 acres of buildings were destroyed. The loss was about $90,000,000.

Your Catalog Page

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52 Goggles, Firemen's.
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We will then notify reliable manufacturers of your interest in such equipment and request that they send you complete information. They will gladly do this and it will be a pleasure for us to help you in this way. No charge whatever!

For Information on Any Equipment Not Listed, Write on This Page or Use Separate Sheet.

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56 Hose, Fire.
57 Hose, Chemical.
58 Hose Holders.
59 Hose Jackets.
60 Hose Standardization Tools.
61 Hydrant Draining Pumps.
62 Hydrants, Fire.
63 Jacks for Fire Trucks.
64 Jacks, Shoring & Prying.
65 Ladders, Fire.
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67 Motorcycles, Fire Dept. Equipped.
68 Nets, Life.
69 Nozzles, Pipes & Misc. Brass Goods.
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71 Pads, Pole Hole.
72 Paints, Fire Resisting.
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74 Pumping Cars, Standard.
75 Pumping Cars, Foam.
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78 Pumps, Portable, for Fire Protection.
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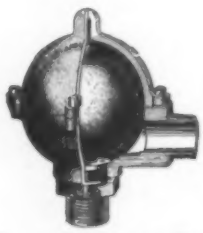

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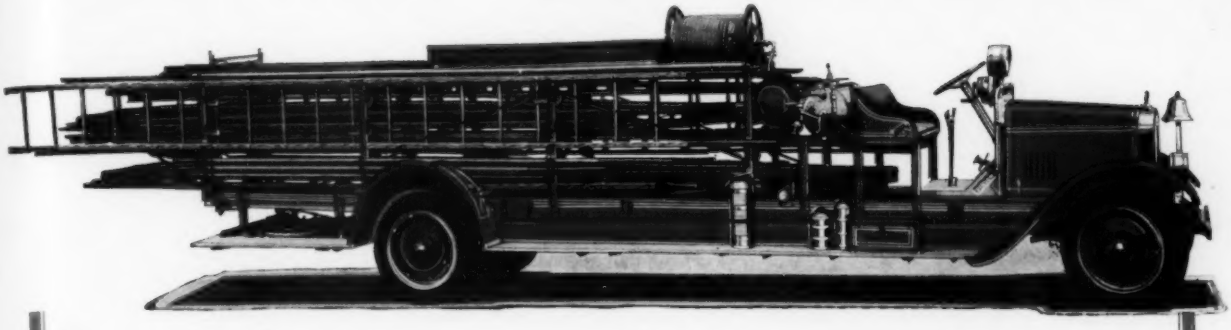

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